Dijit® 5000 Series
SERVICE GUIDE

5120/5240/5122 Printers

Scitex Digital Printing

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FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: Good quality, shielded (braided shielded) cables must be used for the RS-232-C and Centronics interfaces.

Canadian EMI Compliance Statement

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

EMI-CISPR 22/EN 55 022/CE Marking

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Dijit ® 5000 Series *Service Guide*, 5120/5240/5122 Printers

Part Number	Revision	Date	Description	ECN
0113864	001	04/2001	Revision for current 5240 and 5122	PKG938

Previous Releases

Part Number	Revision	Date	Description	ECN
0113851	002	05/00	Revision for new Chapter 2. "Diagnostic Test Routines"	PKG264
0113851	001	09/97	Revision for 5240	09360
0113727	00	06/96	Revision for block changes	08326
0113645	00	10/95	Initial release, 5120	08001

0113864 11/2002 Printed in U.S.A.

Scope

This manual describes service and repair procedures for the following products:

- Dijit® 5120 Printer
- Dijit® 5240 printer

  These printers have 1" printheads

- Dijit® 5122 printer

  This printer has a 2" printhead

- Printing System with Jetscape software
- Printing System with the MailScape™ program
- Printing System with the dual controller

  The controller cabinet encloses a printer.

Note: In this guide, Dijit® Printing System refers specifically to the computer running Jetscape or MailScape™, the cabinet that contains a printer, and any printing system options.

This guide does not describe the following products:

- Dijit® 5000 Printer
- Dijit® 5100 Printing System
- Dijit® 5242 Printing System
- Dijit® 5300 Printing System

For the 5000 printer and 5100 printing system, refer to the following publications:

- *Service Guide* (0113599)
- *Illustrated Parts* (0113600)
- *Parts List* (0113601)
- *Installation Guide* (0113602).

The procedures in this guide should be performed only by a Scitex field engineer, or a service technician trained by Scitex Digital Printing, Inc.

Text Notations

This manual uses the following typographical conventions.

This style	Refers to
`Ready`	Text displayed by the software.
go	Anything you type, exactly as it appears, whether referenced in text or at a prompt.
ENTER	Special keys on the keyboard, such as enter, alt, and spacebar.
[NEXT]	Buttons and lights on the printer operator panel.
Save	Software command buttons and sections of dialog boxes, such as group boxes, text boxes, and text fields.
File → Open	A menu and a specific menu command.
ALT+F1	Pressing more than one key at the same time.
ALT, TAB	Pressing more than one key in sequence.
xx,yy	Variable in error messages and text.
jobfile.dat	File names.

Safety Notations

The following definitions indicate safety precautions to the operator.

Note: Information that needs to be brought to the reader's attention.

Caution: A situation where a mistake could result in the destruction of data or system-type damage.

WARNING
A potential hazard that could result in serious injury or death.

DANGER
An imminent hazard that will result in serious injury or death.

Service and Support

Technical equipment support is available 24 hours a day, 7 days a week.

Software and applications support is available 8:00 a.m. to 5:00 p.m. EST/EDT, Monday through Friday.

	Phone	Fax
U.S.A. and Canada Field/Telephone support	1-800-4SCITEX (1-800-472-4839)	+1-937-259-3808
Europe Field/Telephone support	+4121-806-0404	+4121-806-1920
Asia/Pacific Rim Field/Telephone support	+65-744-6400	+65-744-6700
Japan Field/Telephone support	+81-3-3256-2613	+81-3-3256-2616
Worldwide Technical support, order placement, documentation, and product information requests	+1-937-259-3739	+1-937-259-3808
Worldwide Automated FaxBack™ Information Line	+1-937-259-3520	
Internet Updated service information	http://www.scitexdpi.com	

The above telephone number listing is accurate as of the publication date. On the Internet, go to *http://www.scitexdpi.com/support* for updated telephone numbers.

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Chapter 1. Diagnostics

This chapter describes Jetscape Diagnostics. This program is intended for use only by a trained service technician. Diagnostics functions are grouped under the following main menu selections:

- General functions
- Data system
- Data tests
- Fluid system
- Fluid tests

These sections are preceded by “Using Diagnostics” that describes how to start and use the program.

Note: In a procedure with two or more steps, the steps are numbered. Single-step procedures are described in a paragraph.

Using Diagnostics

The section describes the following general procedures:

- Startup
- Commands
- Online help
- Error displays.

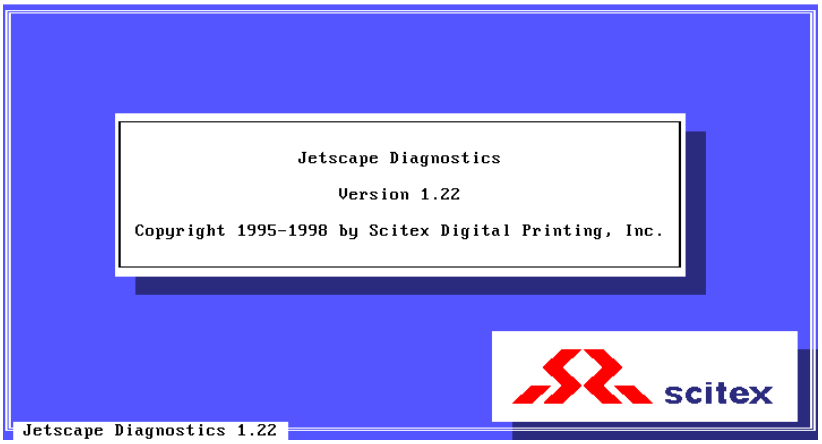
Startup

Use the following procedure to start diagnostics:

1. Exit to DOS.
2. From the directory where Jetscape is installed, enter the following command at the Microsoft® MS-DOS® operating system prompt:

   `go diag`

   The diagnostics splash screen appears (shown below). After a few seconds, the main menu appears.



Commands

Table 1.1 lists the commands used on diagnostics screens and shows the notation used to represent those commands in this chapter.

Table 1.1 Commands and notation, Jetscape diagnostics

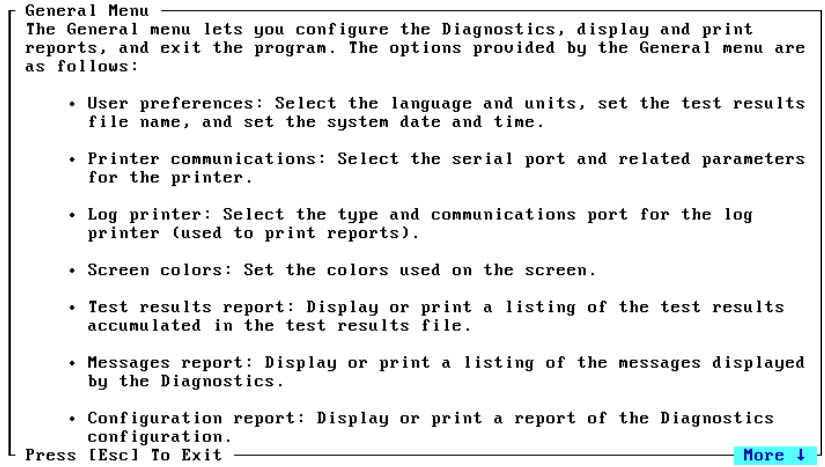
Command or Display	Function	Special Notation	Notation Example
Menu title	Opens pull-down menu	Capitalized	Fluid System
Menu and selection path	Opens last-named selection	Bold with arrows[1]	**General → User Preferences**
Command	Executes named function	Name in brackets	[**S**ave]
Keyboard key	Executes named function	Small caps	ESC
Hot key	Selects item or function	Bold Helvetica	(or press **S**)[2]

1. The arrows show the selection path. For the example path, that means select General and then select User Preferences.
2. Hot keys are not noted in every procedure; they are displayed in red on the screen.

Online Help

Context sensitive online help is available for most diagnostics screens. Use the following procedure to view help.

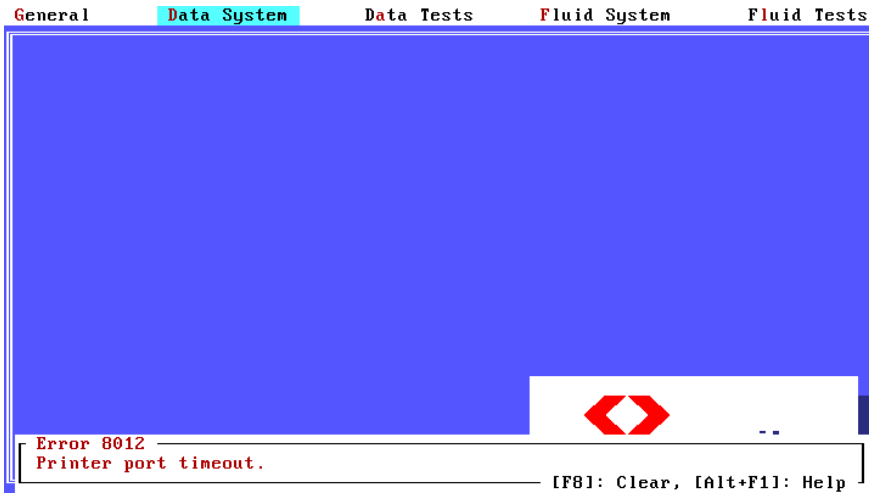
1. To open help for the currently displayed screen, press F1.
2. Use the up and down arrow keys (↑↓) to scroll through the display.
3. Press ESC to exit help.



Error Displays

An error generated during diagnostics appears in a window at the bottom of the screen (see below).

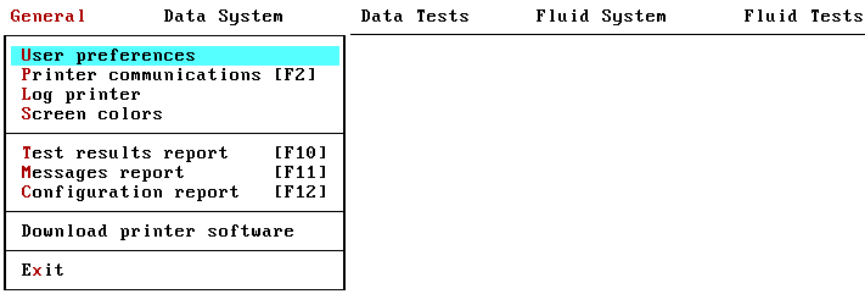
Lists of all data system and fluid system errors generated during operation, and during diagnostic operation, can be viewed in the error logs (see “Error Log” and “Error List”).



General Functions

General menu functions are divided into the following groups:

- System configuration
- Reports
- Downloading software
- Exit.



System Configuration

Use the first four selections on the General menu to set the following system configuration options globally (the active selection applies to all affected screens):

- User preferences
- Printer communications
- Log printer
- Screen colors.

Note: Jetscape Diagnostics and Control Panel require COM3 in the system to use IRQ 9. COM3 in the MailScape controller uses IRQ 11.

Use either of the following connection methods for a MailScape controller:

- Move the cable from COM3 to a different COM port while using Jetscape Diagnostics or Control Panel.
- Connect the printer to a different COM port and configure MailScape accordingly.

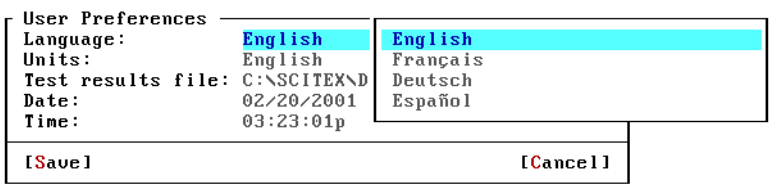
User Preferences

Select **General** → **User preferences** to set the following system parameters:

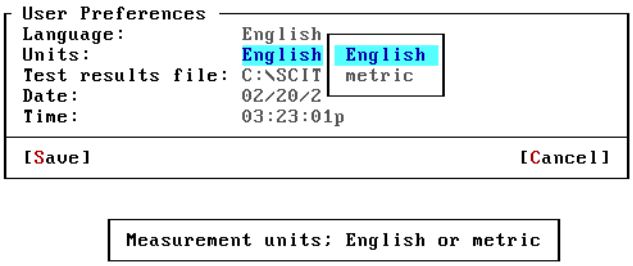
- Language
- Units of measure
- Test results file
- Date and time.

The following sections describe the screens for these parameters. Use the arrows (↓↑) to move from field to field and use TAB to select the function buttons at the bottom of the dialog box.

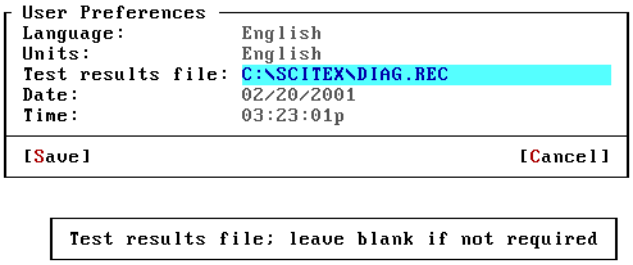
Language Select **General** → **User preferences** → **Language**, and then select a language option from list.



Units of Measure Select **General** → **User preferences** → **Units**, and then select English or metric units from the list.

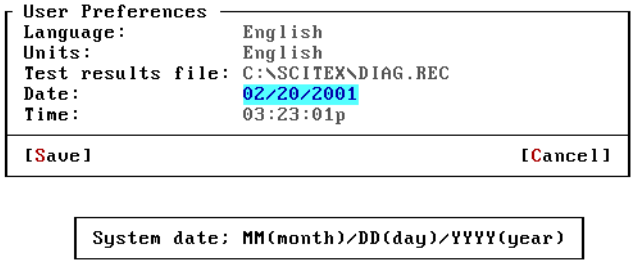


Test Results File Select **General** → **User preferences** → **Test results file** to enter a filename and directory path for where this file will be saved. Any local or network drive that the system controller (host) PC can access can be used. The filename can use any valid DOS characters.



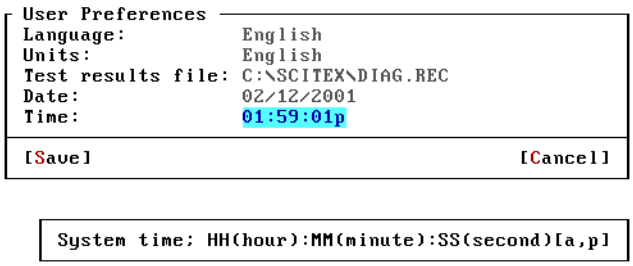
Date and Time Use the following procedure to set the system calendar and clock that run off the CMOS battery in the system controller (host) PC.

1. Select **General** → **User preferences** → **Date / Time**.
2. Enter the correct date.



3. Select the time field and enter the correct time.
4. Select [**S**ave].

Select [**C**ancel] to abandon any change and leave the date and time unchanged.



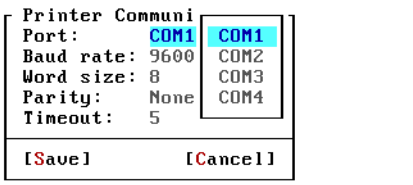
Printer Communications

Select **General** → **User preferences** → **Printer Communications** (or press F2) to set the parameters that define how information is transferred between the system controller (host) PC and the printer connected to the specified port. Different parameters can be set for each COM port.

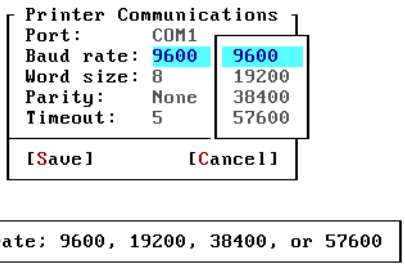
1. Select the port being used for the printer. This selection must match the cable connection between the system controller (host) PC and the printer.

   For most applications, the printer will operate with the default communications settings.

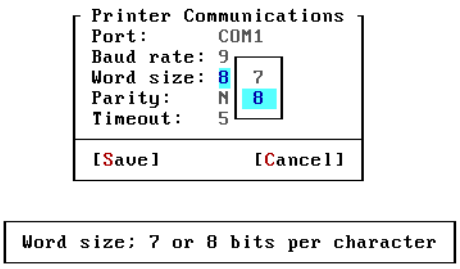
Note: With MailScape, COM3 cannot be used for a printer.



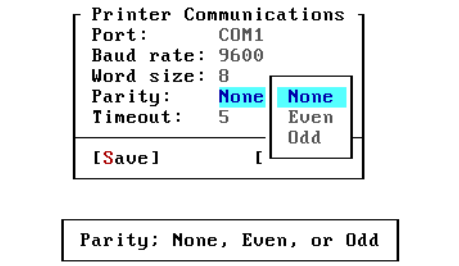
2. Select a baud rate for the port from the list.



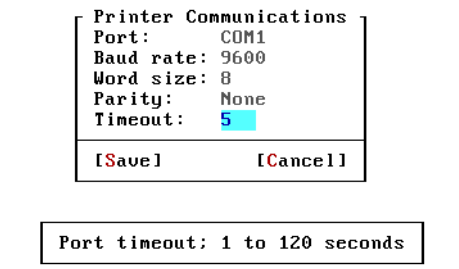
3. Select a word size from the list.



4. Select a type of parity from the list.



5. Enter a time-out value in seconds.



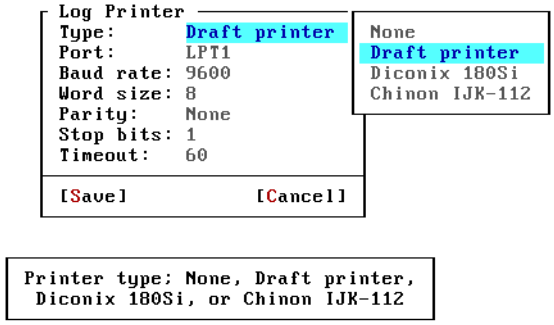
6. Select [**S**ave]. Use TAB to highlight a function button.

   To abandon any changes you made, select [**C**ancel].

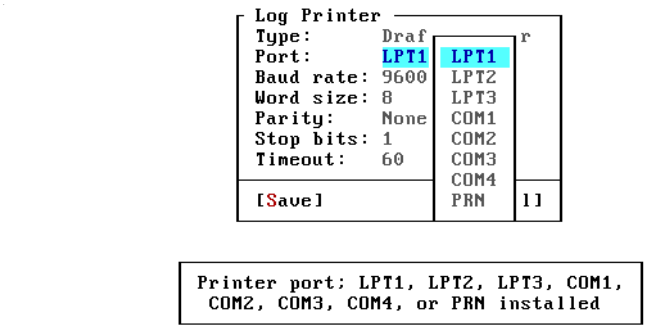
Log Printer

Select **General** → **User preferences** → **Log Printer** (or press F3) to set the parameters that define how reports and error logs are printed. A compatible printer must be connected to the specified port.

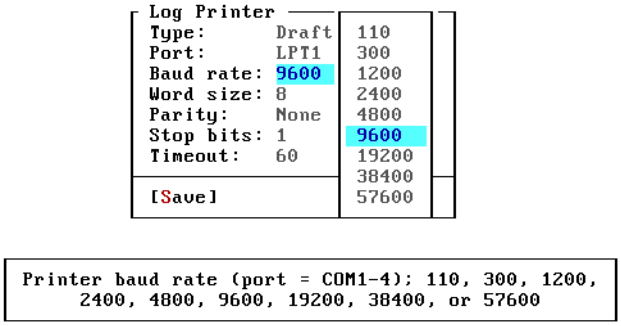
1. Select the type of printer from the list. If your printer is not listed, select a printer to emulate (consult your printer documentation).



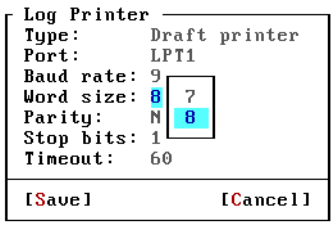
2. Select the port that the log printer is connected to from the list.



3. Select the baud rate for the port from the list.

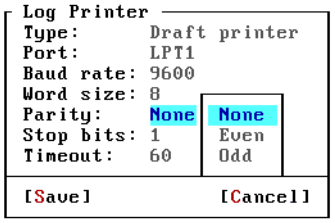


4. Select the word size for the data transfer from the list.



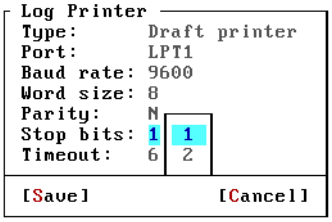
Printer word size (port = COM1-4); 7 or 8 bits per character

5. Select the type of parity to be used from the list.



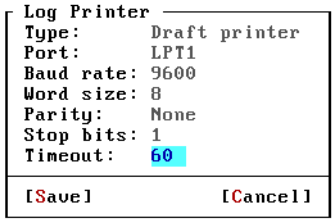
Printer parity (port = COM1-4); None, Even, or Odd

6. Select the number of stop bits to be used from the list.



Printer stop bits (port = COM1-4); 1 or 2

7. Select the time-out setting from the list.



Printer timeout: 1 to 120 seconds

Screen Colors

Use the following procedure to change the appearance of all the program screens:

1. Select **General** → **Screen Colors** from the main menu.

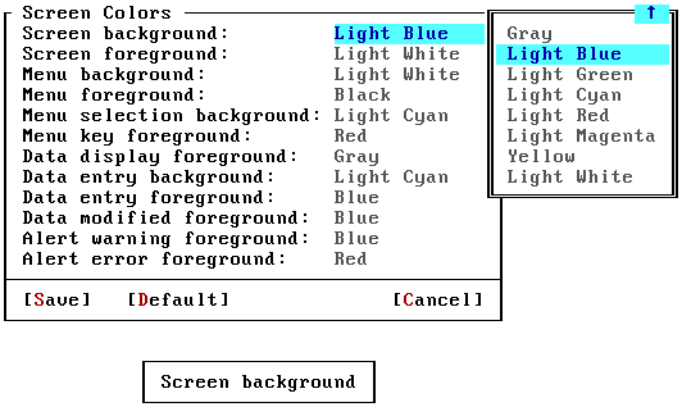
   The screen Colors dialog box appears.

2. Press ENTER to open the color selection dialog box.

3. Select a color and press ENTER.

4. Repeat the procedure for every color you want to change.

5. When finished, select [**S**ave].



Reports

Use the second group of four selections on the General menu to select how diagnostics generates and handles reports. The reports group contains the following selections:

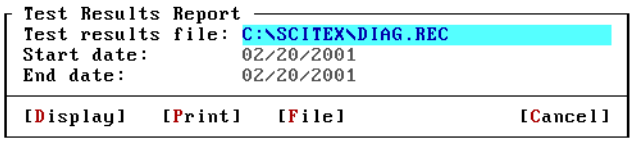
- Test results report
- Messages report
- Configuration report

Test Results Report

Use the following procedure to specify the contents of a test result file.

1. Select **General** → **User preferences** → **Test results report** (or press F10).

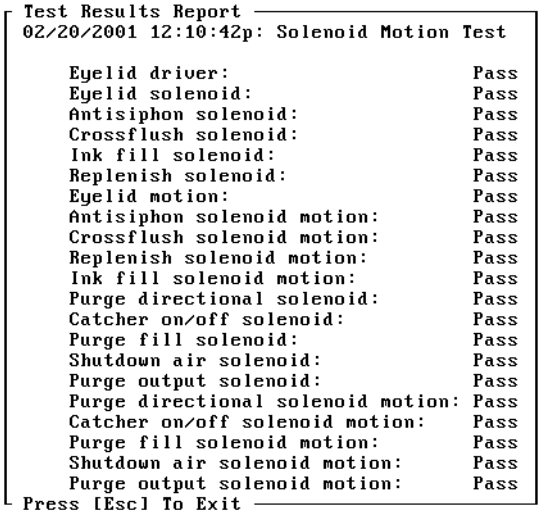
The Test results file dialog box appears.



2. Enter the file name for the report in the Test Results File field.
3. To view data for a specific time period, enter a start date in the Start Date field and an end date in the End Date field.

   The file created contains all test results and operations performed during the specified time period.

4. To display the full report, select [**D**isplay] on Test Results Report dialog box.



5. To print the full report, select [**P**rint] on the Test Results Report dialog box.

Note: A log printer must be connected to the controller and properly configured (see “Log Printer”).

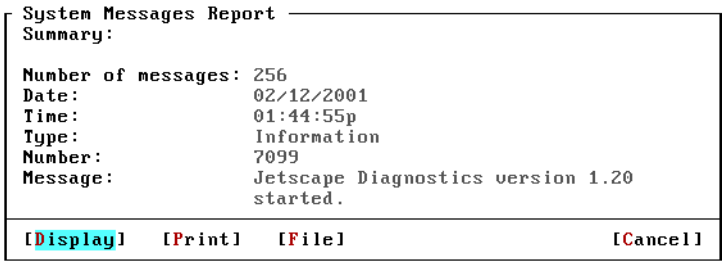
6. To copy the full report to a file on the controller hard disk or a diskette, select [File] on the Test Results Report dialog box.
7. Enter a directory path to the location (disk) where the report file should be saved.

Messages Report

Use the following procedure to display the Messages Report:

1. Select General Messages Report (or press F11).

The first report screen shows the total number of messages logged and displays the most recent message generated.



2. To see detailed information on each message, select [**D**isplay] on the report screen.

   The message list shows messages in the order they were generated.

3. To print the report, press ESC to close the list, and then select [**P**rint] on the summary screen.

Note: A log printer must be connected to the controller to print the report (see "Log Printer").

4. To copy the report to a disk file, select [**F**ile] on the summary screen.

   The report printing dialog box appears.

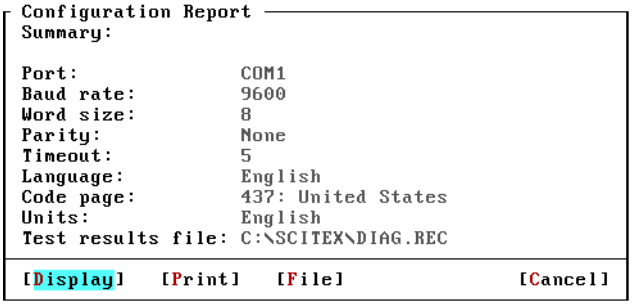
5. Enter the path and name for the report file.

Configuration Report

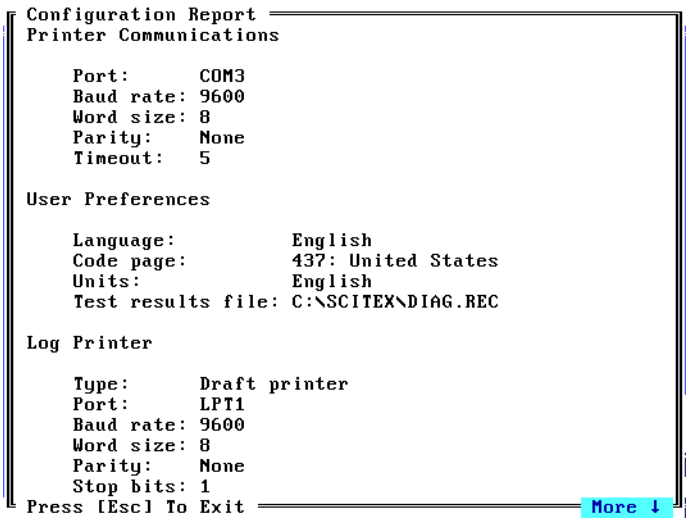
Use the following procedure to display the Configuration Report:

1. Select General Messages Report (or press F12).

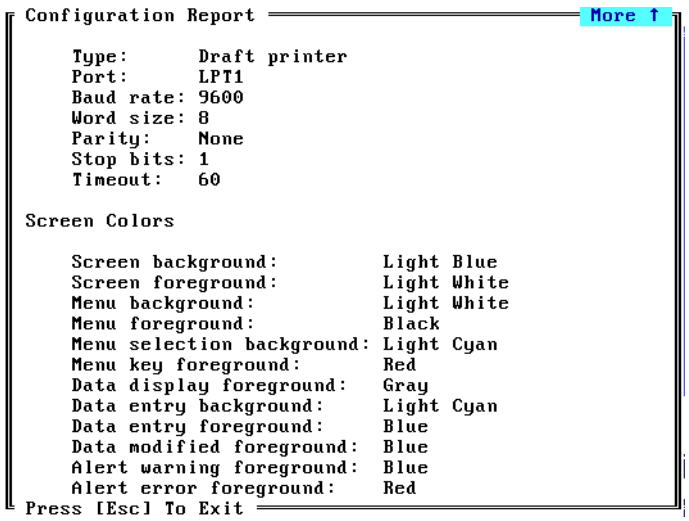
   The first report summarizes the currently active configuration. The parameters shown can be changed using User Preferences and Printer Communications functions on the General menu.



2. To display the full configuration information, select [**D**isplay].



3. To display the remainder of the configuration, select [**M**ore].



4. To print the entire report, press ESC on the report screen and select [**P**rint] on the summary screen.

Note: A log printer must be connected to the controller to print the report (see “Log Printer”).

5. To copy the report to a disk file, select [**F**ile] on the summary screen.

   The report printing dialog box appears.

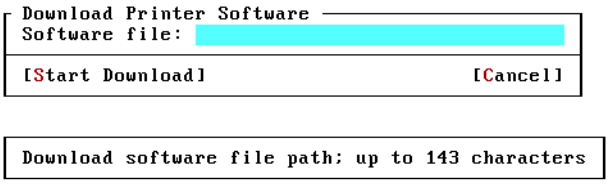
6. Enter the path and name for the report file.

Downloading Software

Select to download printer software from diskette to the printer firmware or flash card. Downloadable files include data system firmware, fluid system firmware, and fluid system Xilinx logic.

Enter the filename and directory path in the field and press ENTER.

Caution: Do not interrupt the download before it is complete. If the download is interrupted, the printer will not reset and operate; the firmware affected by the partial download must be upgraded (see the firmware *Upgrade Instructions* shipped with the upgrade kit).



Exit

To exit Jetscape diagnostics, **General** → **Exit** (press CTRL+BREAK on the keyboard, or select).

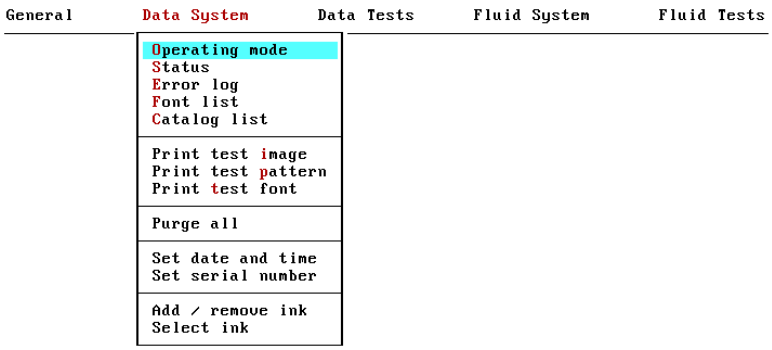
Data System

Use the selections on the data system menu (see below) to perform the following procedures:

- Operate the printer from diagnostics
- View status reports, error logs, font and catalog lists
- Print test images, patterns, and fonts
- Purge stored data
- Set the date, time, and serial number
- Add, remove or select ink.

These procedures are grouped into the following sections:

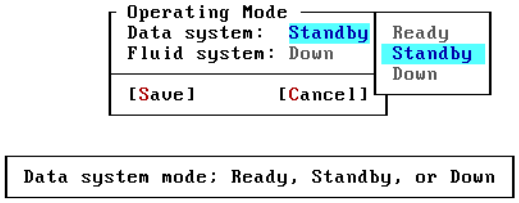
- Operating mode
- Status and error log
- Font and catalog lists
- Test printing
- Purge and setup
- Ink procedures.



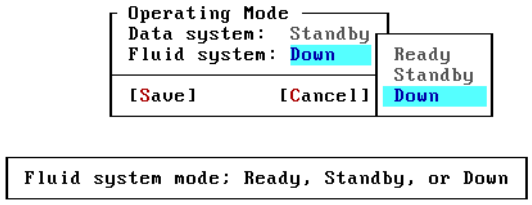
Operating Mode

Use the following procedure to operate the printer while the diagnostics program is running.

1. Select **Data System** → **Operating Mode** on the main menu.
2. Select a state option for the data system.

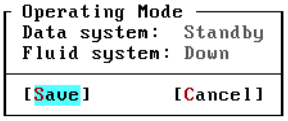


3. Select a state option for the fluid system.



4. Select [**S**ave].

   To close the dialog box, select [**C**ancel].



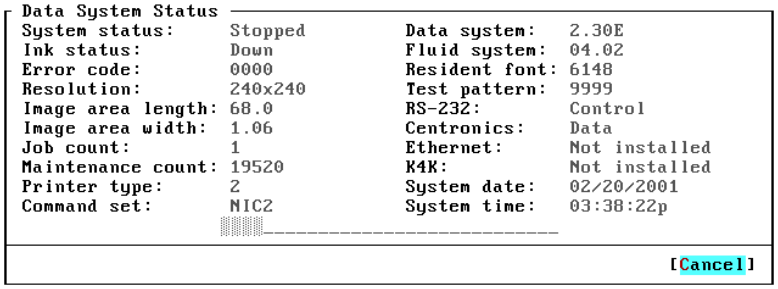
Status and Error Log

Use these screens to display data system status information and view the data system error log.

Status

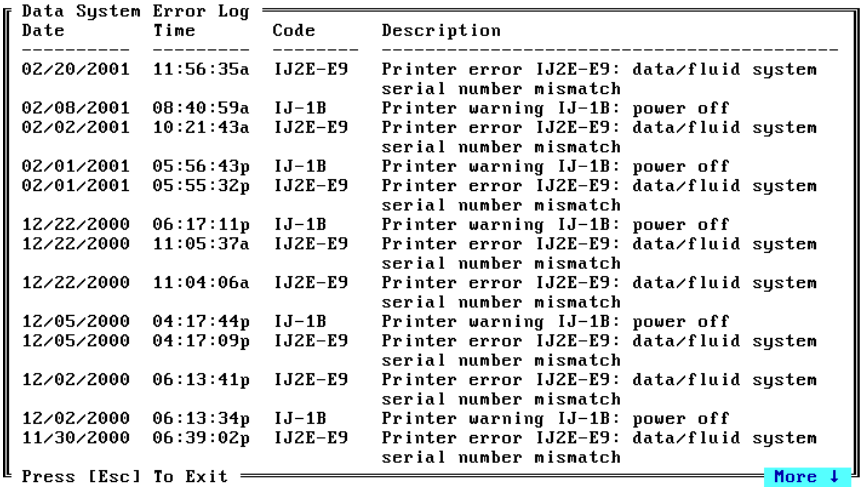
Select **Data System** → **Status** to display the current status of the data system and its current configuration at any time during diagnostic testing. The dialog box that appears has a progress bar showing the printer checking status. When the progress bar is completely shaded, the status display is fully updated.

Press [**C**ancel] to close the dialog box.



Error Log

Select **Data System** → **Error Log** to view a display of the last 256 error messages generated by the printer data system. The display lists the date and time the error was generated, the error code, and description. The Error list selection performs the same function for the fluid system (see “Error List”).



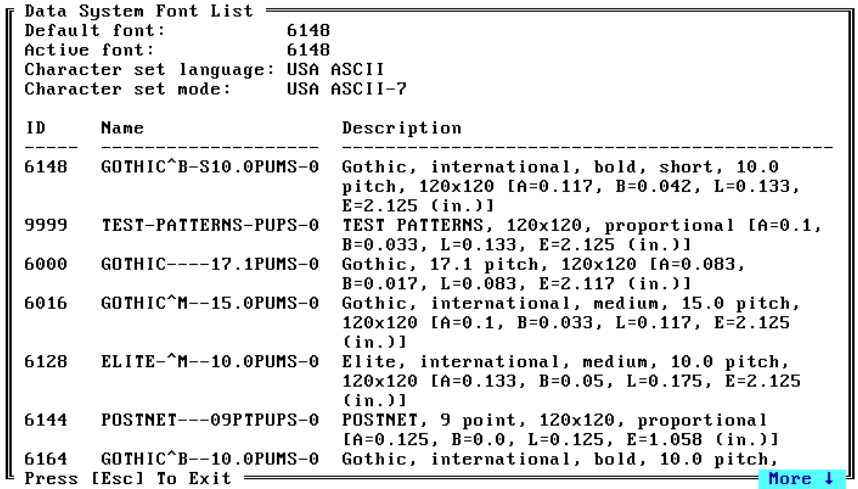
Font and Catalog Lists

Use these screens to display lists of the fonts and catalogs downloaded to the printer and stored in memory. See the printer *Operator's Guide* and Jetscape Print Control *Operator's Guide* for detailed information on using fonts and catalogs.

Font List

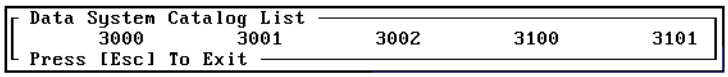
Select **Data System** → **Font List** to display all the fonts currently stored in printer memory. Use the arrow keys to scroll through the list. The display lists the following information:

- Current font information
- The last font used for a job
- The options selected for the default font, character set language, and character set mode
- A list of all the fonts currently downloaded to the printer by ID number, name, and description.

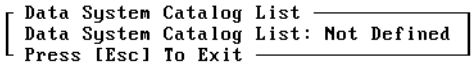


Catalog List

Select **Data System** → **Catalog List** to display the ID numbers for all of the catalogs currently downloaded to the printer.



If no catalogs are loaded, the list is displayed with a "Not Defined" message.



Test Printing

Use these screens to print the following test image files stored in printer memory:

- Test images
- Test patterns
- Test fonts.

Printing test images requires setting the image parameters listed in Table 1.2.

Table 1.2 Image parameters, test images

Parameter	Range / Options	Units of Measure
Image length	0.0 to 68.0	inches
Substrate length	0.0 to 68.0	inches
Printhead height	0.0 to 1.0	inch
Transport direction	Normal, Reverse	-
Piece orientation	0°, 90°, 180°, 270°	degrees
Cue distance	1.0 to 68.0	inches
Cue delay	0.0 to 68.0	inches
Cue error handling	Ignore, Cue, Piece, Cue / Piece	-
Tach rate	120, 240, 480, 960	ppi
Tach source	Normal, K4K, Internal	-
Cue source	Normal, K4K, Internal, I/O	-
Cue mode	Normal, Pass Through, Web	-
Resolution	120X120, 120X240	-
Print density	1 drop per dot, 2 drops per dot, Odd/Even, Odd-skip / Even-skip	-
Printhead phase	1 to 55	phase units
Printhead units	99 to 180	volts

See the printer *Operator's Guide* and Jetscape Print Control *Operator's Guide* for detailed information on using test image files.

Buttons for the following fluid system commands are displayed on the test printing screens:

- Clear
- Ready
- Standby
- Down
- Clean.

This functions work exactly the same as they do on the Fluid System screens (see "Printhead Procedures").

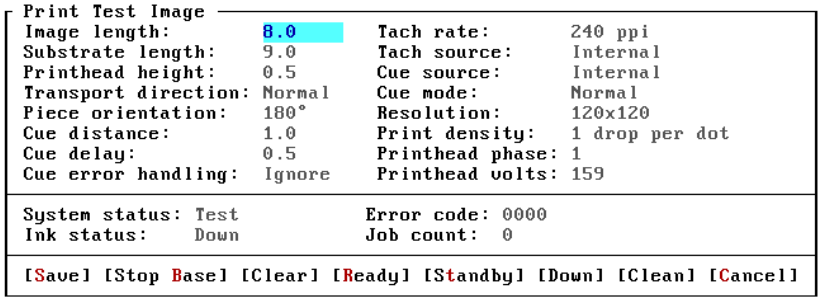
Print Test Image

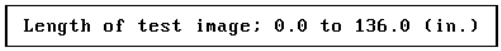
Use the following procedure to print test images:

1. Select **Data System** → **Printer test image**.
2. Enter the required parameters (see Table 1.2). The allowable range or options for each parameter are displayed below the main dialog box.

   The maximum values for image Length, substrate Length, cue Distance and cue Delay depend on the maximum image area, which depends on the selected resolution. Lowering resolution changes the maximum values. If the existing values exceed the new maximum values, the existing values are truncated to the new maximum values.
3. Select [**S**ave].

   To abandon entered values and close the dialog box, select [**C**ancel].
4. Select [**R**eady].
5. Press the [TEST PRINT] button on the printer operator panel.
6. To stop printing, press [TEST PRINT] again.
7. To stop the document transport, select [Stop **B**ase].





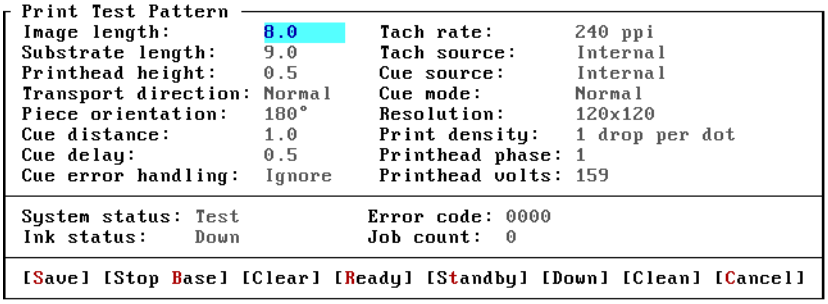
Print Test Pattern

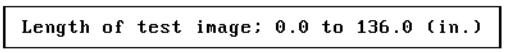
Use the following procedure to print test patterns:

1. Select **Data System** → **Printer test pattern**.
2. Enter the required parameters (see Table 1.2). The allowable range or options for each parameter are displayed below the main dialog box.

   The maximum values for image Length, substrate Length, cue Distance and cue Delay depend on the maximum image area, which depends on the selected resolution. Lowering resolution changes the maximum values. If the existing values exceed the new maximum values, the existing values are truncated to the new maximum values.
3. Select [**S**ave].

   To abandon entered values and close the dialog box, select [**C**ancel].
4. Select [**R**eady].
5. Press the [TEST PRINT] button on the printer operator panel.
6. To stop printing, press [TEST PRINT] again.
7. To stop the document transport, select [Stop **B**ase].





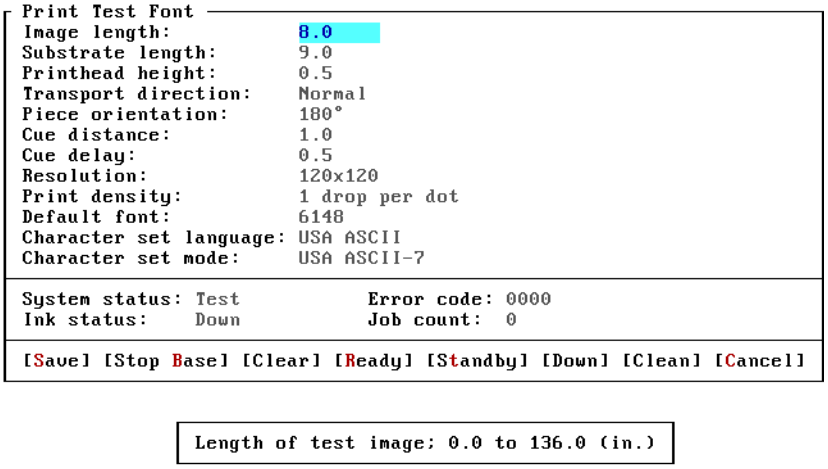
Print Test Font

Use the following procedure to print test fonts:

1. Select **Data System** → **Printer test font**.
2. Enter the required parameters (see Table 1.2). The allowable range or options for each parameter are displayed below the main dialog box.

   The maximum values for image Length, substrate Length, cue Distance and cue Delay depend on the maximum image area, which depends on the selected resolution. Lowering resolution changes the maximum values. If the existing values exceed the new maximum values, the existing values are truncated to the new maximum values.
3. Select [**S**ave].

   To abandon entered values and close the dialog box, select [**C**ancel].
4. Select [**R**eady].
5. Press the [TEST PRINT] button on the printer operator panel.
6. To stop printing, press [TEST PRINT] again.
7. To stop the document transport, select [Stop **B**ase].



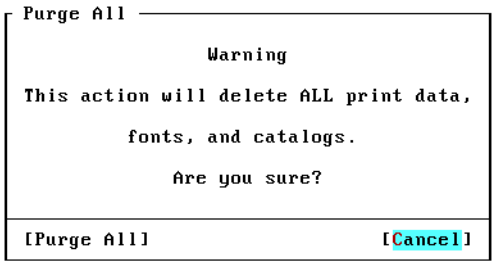
Purge and Setup

Use the following procedures to purge printer memory and enter system setup parameters.

Purge All

Use the following procedure to zero all job counts and downloaded information, including pending pieces, fonts, and catalogs.

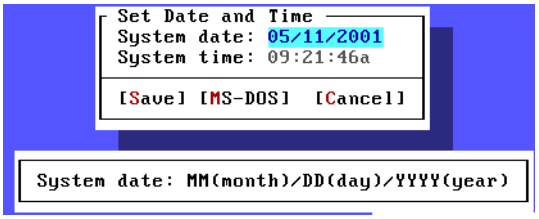
1. Select **Data System** → **Purge All**.
2. Select [**P**urge All].
3. To stop the purge operation, select [**C**ancel].



Set Date and Time

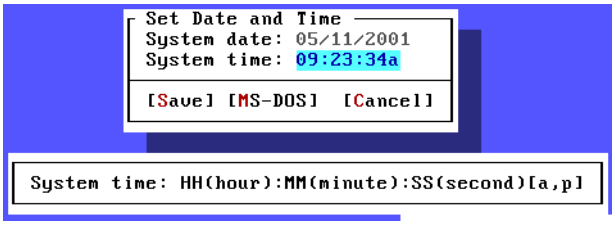
Use the following procedure to set the printer clock:

1. Select **Data System** → **Set date and time**.
2. Enter the desired date in the format shown. Use the arrows (↓ ↑) to move between fields.



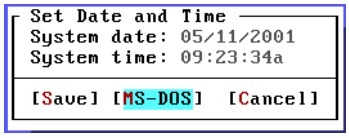
3. Enter the desired time in the format shown.

Use this function to set the printer clock to match a clock other than the BIOS clock of the system controller (host) PC. For example, use it to set the printer clock to match the factory time clock.



4. Select [**S**ave] if you enter a time and date.
5. Select [**M**S-DOS] to automatically synchronize the printer clock with the system controller (host) PC clock (to set the PC clock, see “Set Date and Time”).

   Select [**C**ancel] to abandon any entered time and date and close the dialog box.

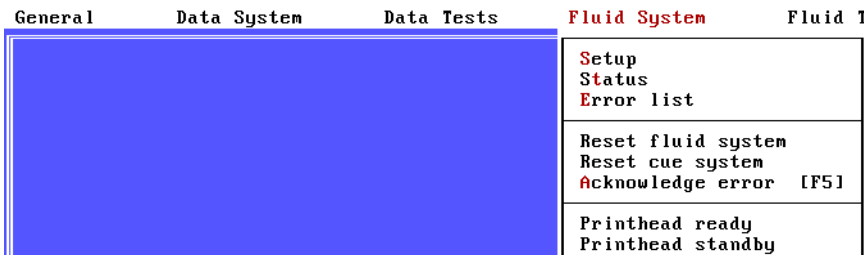


Set Serial Number

Use the following procedure to enter the printer serial number in memory:

1. Select **Data System** → **Set serial number**.
2. Enter a the 4-digit printer serial number.

   The serial number is on the product data label affixed to the back of the printer or the top of the system enclosure on a printing system.



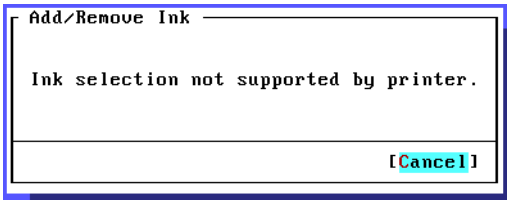
Ink Procedures

Use the following procedures to add ink, remove ink, or select which ink is used for printing.

Add / Remove Ink

Select **Data System** → **Add / remove ink** to display this dialog box.

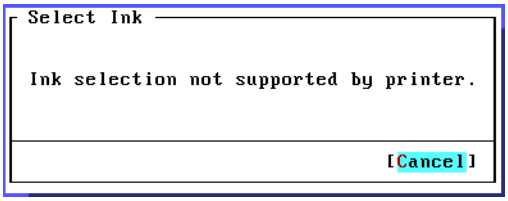
Note: This feature has not been implemented at this time.



Select Ink

Select **Data System** → **Select ink** to display this dialog box.

Note: This feature has not been implemented at this time.



Data Tests

Use the selections on the data tests menu (see below) to perform the following procedures:

- Centronics local loopback and data input tests
- Read DIP switches
- Ethernet ping, reliability, socket, and hardware tests
- K4K hardware test
- LED hardware test
- Sequential output relay test
- Walking bit output relay test
- Print output local and remote tests.

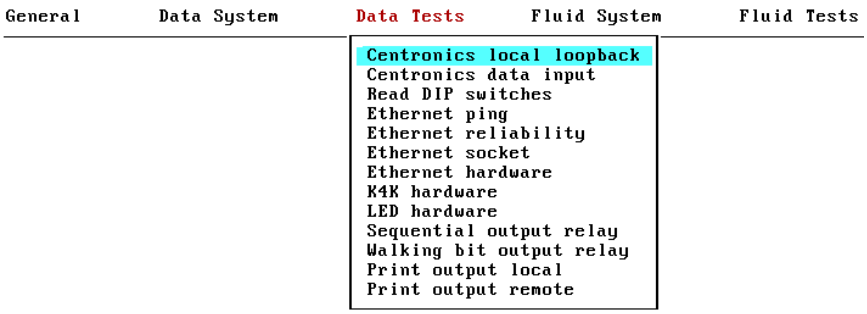
These procedures are grouped into the following sections:

- Centronics tests
- DIP switch test
- Ethernet tests
- K4K test
- LED test
- Output tests.

Note: The dialog for some selections includes a “Repeat” parameter. The value for this selection specifies the number of times the test is run. The test is repeated the specified number of times regardless of the results.

The test dialog box displays a test progress status bar, and then the test result (pass or fail). If the test was repeated, the total number of tests that passed or failed is given. The [**S**tart] function begins the test or test series, and [**C**ancel] closes the dialog box.

Caution: Ethernet and K4K tests apply only if that option is installed in the printer.



Centronics Tests

Use the following procedures to perform the Centronics loopback and Centronics data tests.

Centronics Local Loopback

Use the following procedure to test the Centronics parallel connector and its associated hardware and firmware in the printer.

1. Disconnect the data cable from the CENTRONICS connector on the printer back panel.

   This cable goes to the parallel connector on the host (system controller) PC.

2. Select **Data Tests** → **Centronics local loopback**.

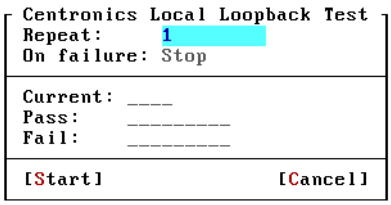
3. Enter a value for the Repeat option.

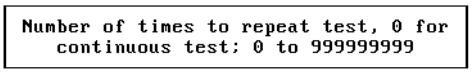
4. Select an option for “On Failure” from the list.

5. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.

6. Check the “Pass / Fail” results display to confirm that the data transfer was successful.





Centronics Data Input

Use the following procedure to test the Centronics data path from the host (system controller) to the printer.

1. Check that the parallel data cable is connected to a parallel port on the host (system controller).

   This cable goes to the CENTRONICS connector on the printer back panel.

2. Select **Data Tests** → **Centronics data input**.

3. Select a port from the list.

   The port selected must match the one that the data cable is connected to.

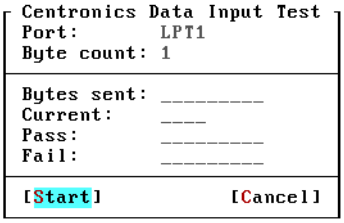
4. Enter a value for the byte count.

   This value specifies the number of bytes to be sent as a test pattern during the current test.

5. Select [**S**tart] to run the test.

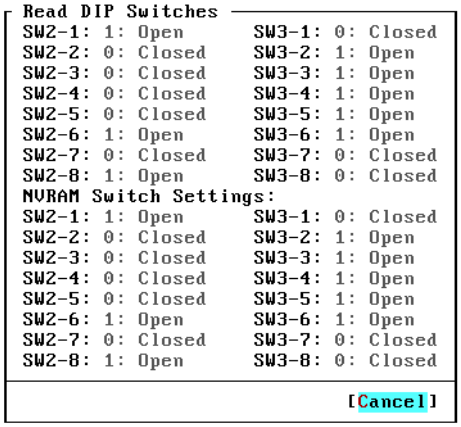
   Select [**C**ancel] to close the dialog box. The test runs to completion.

6. Check the “Pass / Fail” results display to confirm that the data transfer was successful.



DIP Switch Test

Select **Data System** → **Read DIP Switches** to display the current settings of the data system main board DIP switches. This test continuously reads and displays switch status (open or closed). Confirm that the switch settings are correct (see “DS Main Configuration” in Chapter 5, “Removal Procedures”).



Ethernet Tests

Use the following procedures to perform the Ethernet ping, reliability, socket, and hardware tests.

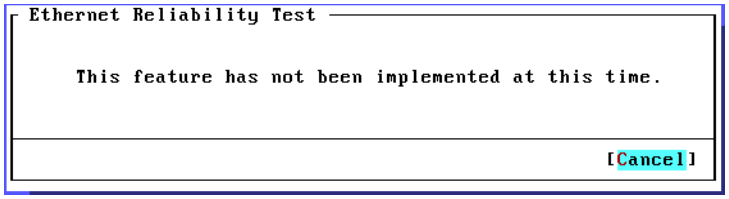
Note: The Ethernet tests have not been implemented at this time.

Ethernet Ping

Select **Data Tests** → **Ethernet ping** to display the dialog box.

Ethernet Reliability

Select **Data Tests** → **Ethernet reliability** to display the dialog box.

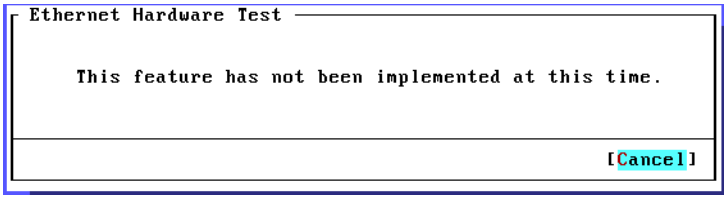


Ethernet Socket

Select **Data Tests** → **Ethernet socket** to display the dialog box.

Ethernet Hardware

Select **Data Tests** → **Ethernet hardware** to display the dialog box.



K4K Test

Use the following procedure to verify proper communication between the optional K4K interface and the data system.

1. Check that the K4K cable is connected to a parallel port on the host (system controller).

   This cable goes to the K4K connector on the printer back panel.

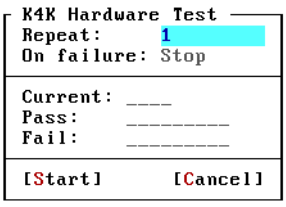
2. Select **Data Tests** → **K4K hardware**.

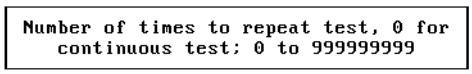
3. Enter a value for the “Repeat” parameter. The minimum value is 1.

4. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.

5. Check the “Pass / Fail” results display to confirm that the data transfer was successful.



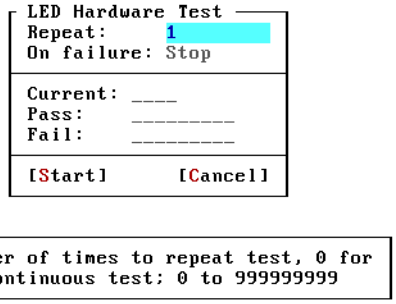


LED Test

Use the following procedure to verify that the data system LEDs are operating properly.

1. Select **Data Tests** → **LED hardware**.
2. Enter a value for the “Repeat” parameter. The minimum value is 1.
3. Select an option for the “On failure” parameter from the list.
4. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.
5. Check the that the LEDs blink on and off, and that the “Pass / Fail” results display confirms that the hardware passed the test.



Output Tests

Use the procedures in this section to test the following printer functions:

- Sequential output relay
- Walking bit output relay
- Print output local
- Print output remote.

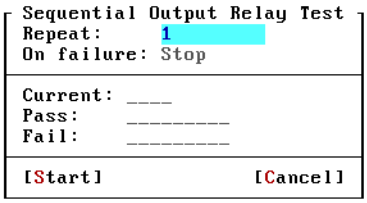
Sequential Output Relay

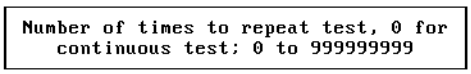
Use the following test to verify the proper operation of the sort output signals sent from the printer.

1. Select **Data Tests** → **Sequential output relay**.
2. Enter a value for the “Repeat” parameter. The minimum value is 1.
3. Select an option for the “On failure” parameter from the list.
4. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.
5. If possible, check that the devices connected to the sort outputs are being activated by the test.

   Various combinations of relays are activated or deactivated according to the binary value.
6. Check the “Pass / Fail” results display to confirm that the hardware passed the test.





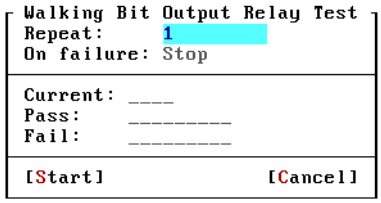
Walking Bit Output Relay

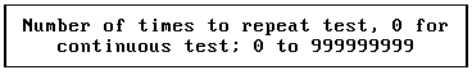
Use the following test to verity the proper operation of sort output signals sent from the printer. This test activates and deactivates the relays individually in sequential order.

1. Select **Data Tests** → **Walking bit output relay**.
2. Enter a value for the “Repeat” parameter. The minimum value is 1.
3. Select an option for the “On failure” parameter from the list.
4. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.
5. If possible, check that the devices connected to the sort outputs are being activated by the test.

   Various combinations of relays are activated or deactivated according to the binary value.
6. Check the “Pass / Fail” results display to confirm that the hardware passed the test.



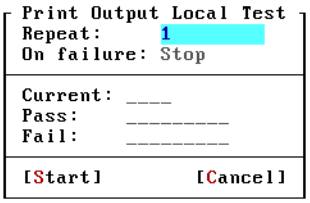


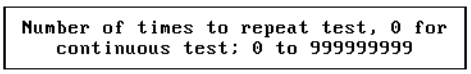
Print Output Local

Use the following procedure to verify the proper operation of the data system output board control and status signals.

1. Select **Data Tests** → **Print output local**.
2. Enter a value for the “Repeat” parameter. The minimum value is 1.
3. Select an option for the “On failure” parameter from the list.
4. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.
5. Check the “Pass / Fail” results display to confirm that the hardware passed the test.



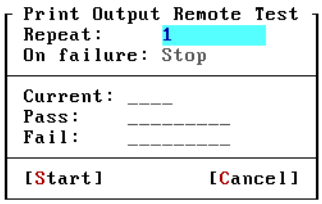


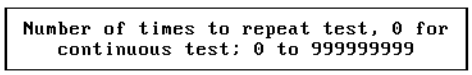
Print Output Remote

Use the following procedure to verify the proper operation of the data system output board. The test outputs pre-defined binary signals that create a printed pattern. If tach and cue are enabled, this test generates a continuous image.

1. Select **Data Tests** → **Print output remote**.
2. Enter a value for the “Repeat” parameter. The minimum value is 1.
3. Select an option for the “On failure” parameter from the list.
4. Select [**S**tart] to run the test.

   Select [**C**ancel] to close the dialog box. The test runs to completion.
5. Check the “Pass / Fail” results display to confirm that the hardware passed the test.





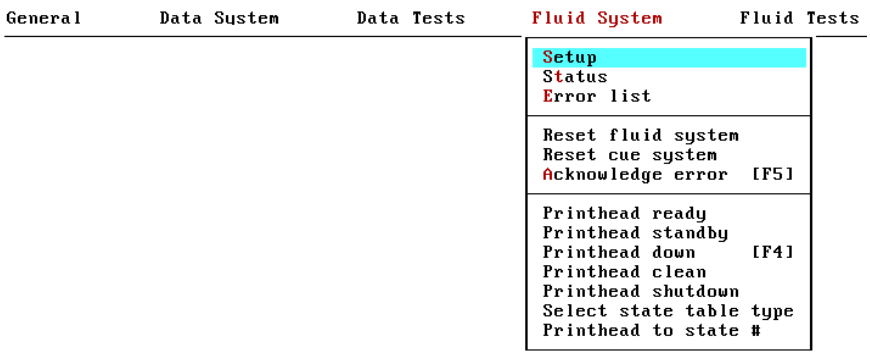
Fluid System

Use the selections on the fluid system menu (see below) to perform the following procedures:

- Check setup and status
- View and acknowledge errors
- Reset the fluid system and cue system
- Change the printhead state
- Select state tables.

These procedures are grouped into the following sections

- Setup and status
- Error list
- Acknowledge error
- Reset procedures
- Printhead procedures
- State table procedures.



Setup and Status

Use these selections to define the fluid system setup and check the currently active parameters. Table 1.3 summarizes the options for each parameter.

Table 1.3 Setup parameter options, fluid system

Parameter	Range / Options	Units of Measure
Cue Distance	1.0 to 68.0 (See also Table 1.4)	inches
Cue Delay	0.0 to 68.0	inches
Document length	0.0 to 68.0	inches
Printhead height	0.0 to 1.0	inch
Tach source	Normal, K4K, Internal	-
Tach rate	120, 240, 480, 960	ppi
Tach rate scale	Normal (x1), Divide by 2 (/2), Divide by 4 (/4), Multiply by 2 (x2)	-
Cue source	Normal, K4K, Internal	-
Cue sense	Normal, K4K, Internal, I/O	-
Cue mode	Normal, Pass Through, Web	-
Print density	1 drop per dot, 2 drops per dot, Odd-even / even-skip	-
Phase	1-55	Phase units
Volts	99-190	Volts
Ink fill amount	0.0 to 200.0	ml
Lost ink	0.0 to 200.0	ml

Setup

Use the following procedure to define the fluid system setup.

1. Select **Fluid System** → **Setup**.
2. Enter a cue distance in inches.

   Maximum values for cue parameters depend on horizontal resolution (summarized in Table 1.4). See the printer *Operator's Guide* and Jetscape Print Control *Operator's Guide* for detailed information on printer setup parameters.
3. Enter values for the parameters listed in Table 1.3.

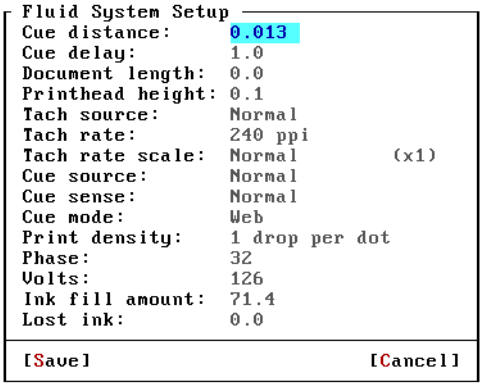
Note: Actual document length and cue distance can exceed the range allowed in diagnostics (compare Table 1.4 and Table 1.3).

Table 1.4 Actual maximum cue distances

Horizontal Resolution	Maximum Cue Distance, Cue Delay, and Document Length
120 dpi	120 inches (304.8 cm)
240 dpi	60 inches (152.4 cm)
480 dpi	30 inches (76.2 cm)

4. Select [**S**ave].

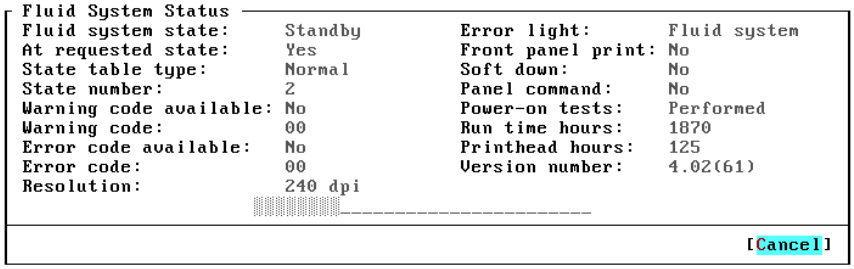
   To close the dialog box and abandon any changes, select [**C**ancel].



Status

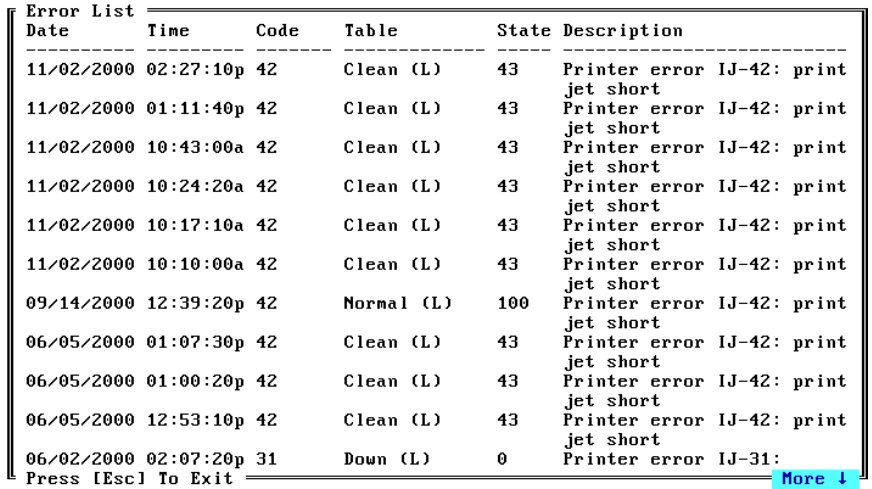
Select **Fluid System** → **Status** to display the current status of the fluid system at any time during diagnostic testing. Status information is updated in one-second intervals, and the following status information is displayed:

- Current fluid system state
- Status of the last state table request
- State table type and state number
- Warning and error code information
- Current print resolution
- Origin of error light activation
- Operator panel command requests
- Run time and printhead hours
- Fluid system software version number.



Error List

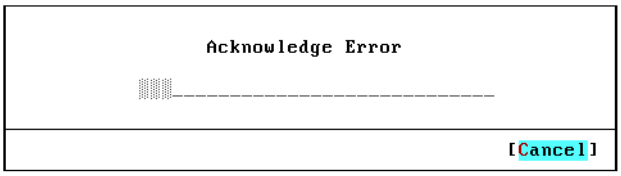
Select **Fluid System** → **Error list** to view a display of the last 256 error messages generated by the printer fluid system. The display lists the date and time the error was generated, the error code, and description. The Error Log selection performs the same function for the data system (see “Error Log”).



Acknowledge Error

Select **Fluid System** → **Acknowledge error** to re-establish communication between the system controller and the data system (or press F5). The Acknowledge Error display shows the progress of the communications operation. The dialog box closes when communication between the system controller and the data system is re-established, or if you press [**C**ancel]. The operation still runs to completion.

During fluid system tests, the host (system controller) temporarily cuts off communication with the printer data system. Loss of communications prevents the controller from acknowledging data system errors. The Acknowledge Error display appears while communications is being re-established.

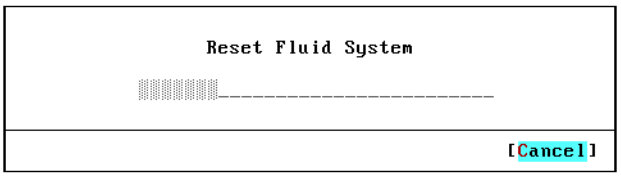


Reset Procedures

Use the following procedures to reset the fluid system and clear the tach and cue counters.

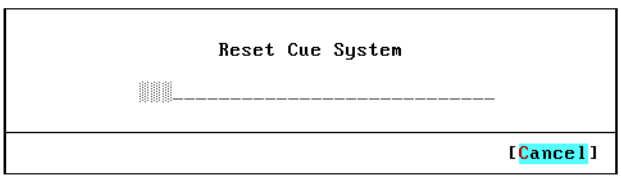
Reset Fluid System

Select **Fluid System Reset Fluid System** to clear memory in the fluid system processor and run the POC tests. All data held in volatile memory is lost. To stop the reset process before it runs to completion, select [**C**ancel].



Reset Cue System

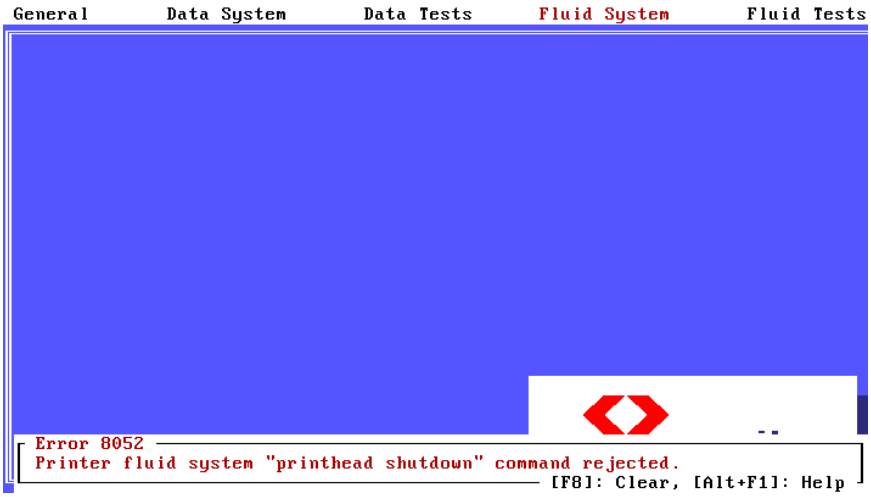
Select Fluid System Reset Cue System when a cue error is detected. The cue count is zeroed. To close the dialog box, select [**C**ancel]. The reset operation continues without interruption.



Printhead Procedures

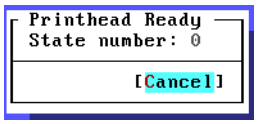
Use the following procedures to operate the printer while in diagnostics. All the printhead procedures dialog boxes are identical except for the title. The state number display is dynamic and increments as the specified operation runs. Apply the following guidelines to all printhead procedures:

- Always allow a printhead operation to run to completion before selecting another procedure. Printhead procedures take several minutes and should not be interrupted.The fluid system cannot have more than one state transition command in process (queued) at one time. Commands received while another operation is still in progress are rejected (see sample screen below). Multiple status commands can be queued.
- Do not enter a command using the operator panel while a command selected from diagnostics is still in process.
- On all the printhead procedures displays, [**C**ancel] only closes the dialog box; this selection is not always active.
- The state number display increments dynamically to show the progress of the operation.



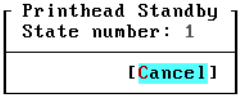
Printhead Ready

Select **Fluid System** → **Printhead Ready** to turn on the fluid system and open the eyelid.



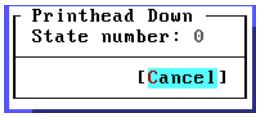
Printhead Standby

Select **Fluid System** → **Printhead Standby** to turn on the fluid system. The eyelid remains closed.



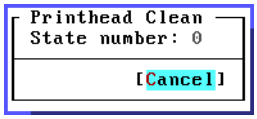
Printhead Down

Select **Fluid System** → **Printhead Down** (or press F4) to deactivate the fluid system.



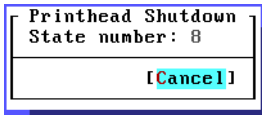
Printhead Clean

Select **Fluid System** → **Printhead Clean** to start the self-cleaning operation.



Printhead Shutdown

Select the **Fluid System** → **Printhead Shutdown** deactivate the fluid system and evacuate ink from the printhead.



State Table Procedures

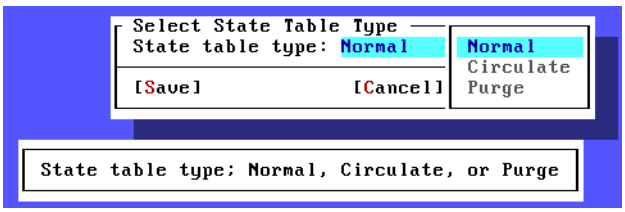
Use the following procedures to put the printer in a specific fluid system state.

Select State Table Type

Use the following procedure to select the state for the fluid system during testing:

1. Select **Fluid System** → **Select State Table Type**.
2. Select the a state from the list.

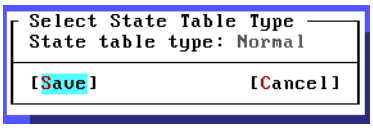
   The highlighted state becomes active.



3. Press TAB to move to the functions.
4. Select [**S**ave].

   To combine these steps, press ENTER twice after selecting a state.

   To close the dialog box, select [**C**ancel].



Printhead to State

Use this selection to specify a state in a selected state table for use during testing. Enter a state number in the State Number field. Although state numbers range from 0 to 127, the maximum state number value depends on the selected state table type.

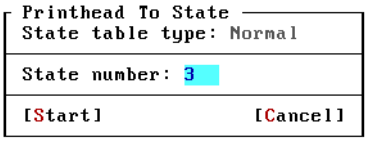
1. Select **Fluid System** → **Printhead to State #**.

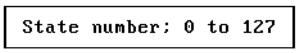
   See “Select State Table Type” to change the active state table.

2. Enter a state number in the field.

3. Select [**S**tart] or press ENTER twice after entering a state number.

   To close the dialog box without selecting a state, select [**C**ancel].





Fluid Tests

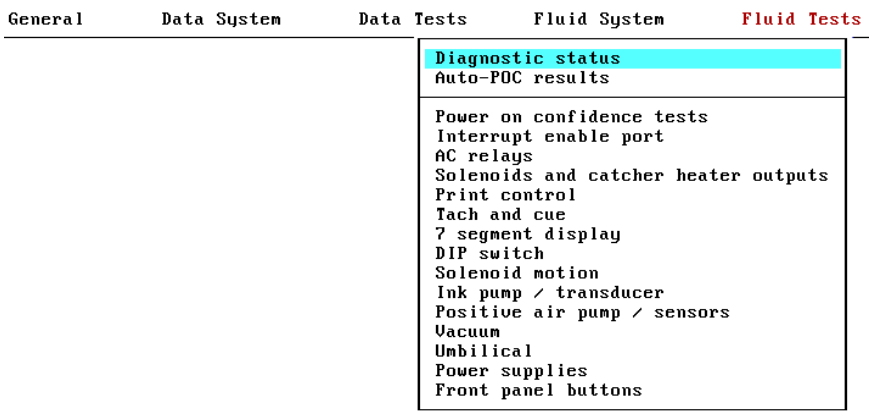
Use the selections on the fluid tests menu (see below) to perform the following procedures:

- Checking diagnostic and Power On Confidence (POC) test results
- Running power on confidence (POC) tests
- Interrupt enable port
- Testing hardware components
- Testing print control and tach and cue.

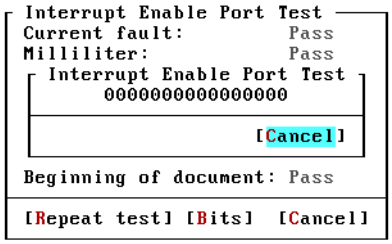
These procedures are grouped into the following sections:

- Status and test results
- Power on confidence tests
- Hardware tests
- Print control.

Note: When performing a fluid system test, the fluid system must be deactivated using the Printhead Down command from the Fluid System menu (or by pressing [STANDBY] on the printer operator panel.)



Some fluid tests displays contain [**R**epeat test] and [**B**its] function buttons. Select [**R**epeat Test] to run a test again when the initial test is complete. The number of test repetitions is determined by the value entered. Select [**B**its] to see a binary display of the test results (see example below). Select [**C**ancel] to close the dialog box.



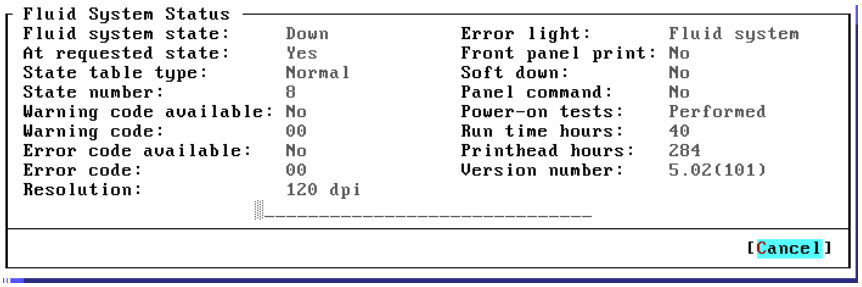
WARNING
When performing a fluid test with the printhead covers removed, install the lockout actuator switch tool provided with the DTR kit. See Appendix C, “Printhead Procedures” for the installation procedure.

Status and Test Results

Use the following procedures to check the current status of the printer and its diagnostics and to view the results of the automatic power on confidence tests.

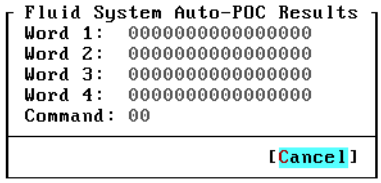
Diagnostic Status

Select **Fluid System** → **Diagnostic status** to view the current fluid system setup. The screen updates dynamically as indicated by the shaded boxes on the progress bar.



Auto-POC Results

Select **Fluid System** → **Auto-POC results** to display the bit patterns for the results of the last failed POC test. These results do not include tests requested during diagnostic testing.

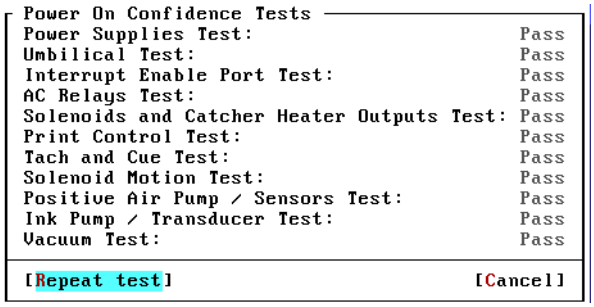


Power On Confidence Tests

Select **Fluid Tests** → **Power on confidence tests** to run the sequence of tests performed by the fluid system at powerup. These tests verify basic operation of the fluid system hardware. In addition to the POC tests, this test sequence includes the Print Control test, which detects printhead shorts.

The result of each test is displayed. If a test fails, a message dialog appears, prompting you to repeat the test or cancel the test and continue with the next POC test.

Note: The Power-on Confidence test cannot be performed when the fluid system is up or in a transitional state (between modes).

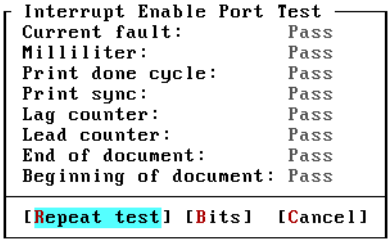


Hardware Tests

Use the following procedures to test various specific components of the printer fluid system.

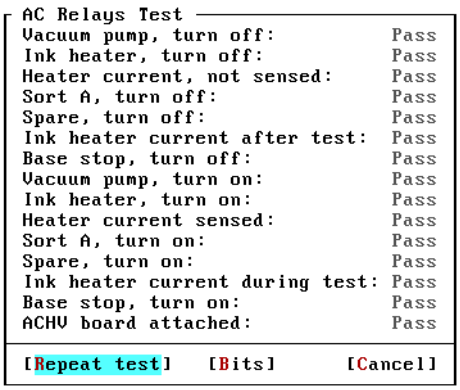
Interrupt Enable Port

Select **Fluid Tests** → **Interrupt enable port** to verify fluid system control of external interrupt signals.



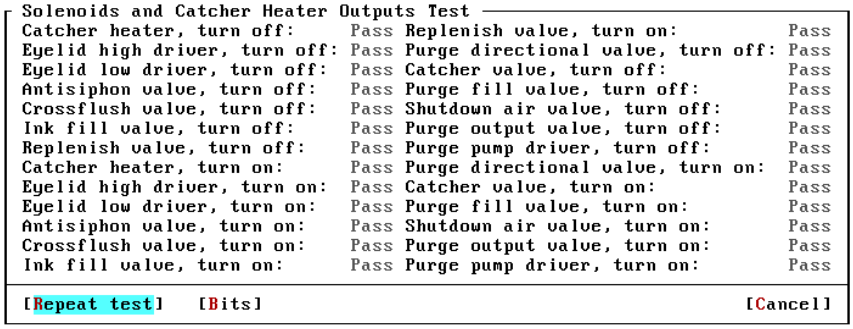
AC Relays

Select **Fluid Tests** → **AC relays** to verify operation of the relays used to control the fluid system hardware.



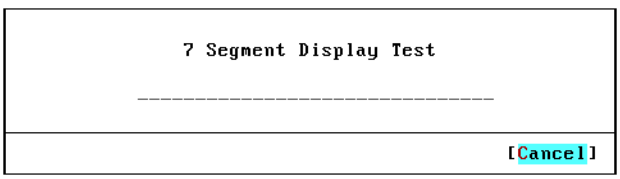
Solenoids and Catcher Heater Outputs

Select **Fluid Tests** → **Solenoids and catcher heater outputs** to verify the proper operation of the listed fluid system components.



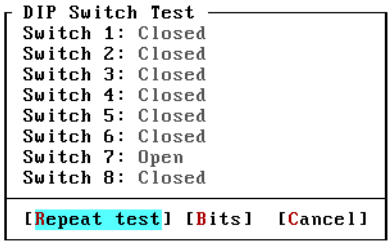
Seven Segment Display

Select **Fluid Tests** → **7 segment display** to check the operation of this piggyback board on the inkjet controller. The test lights each segment of the display in sequence. The dialog box displays the progress of the test.



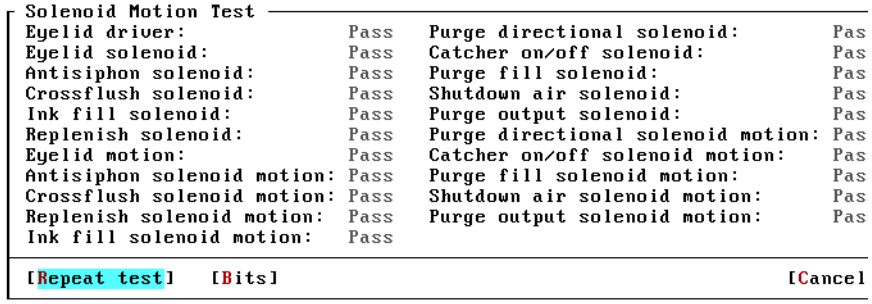
DIP Switch

Select **Fluid Tests** → **DIP switch** to display the current inkjet controller board settings. Confirm the switch settings (see Chapter 5, “Removal Procedures”).



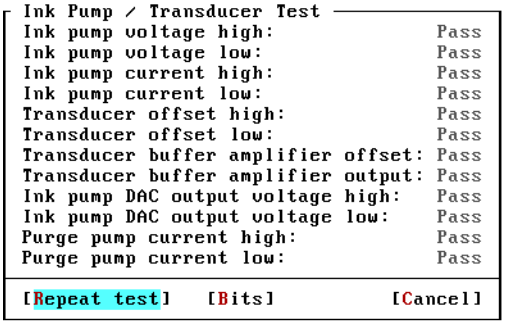
Solenoid Motion

Select **Fluid Tests** → **Solenoid motion** to verify the proper operation of the listed components. The test activates each solenoid to check its operation.



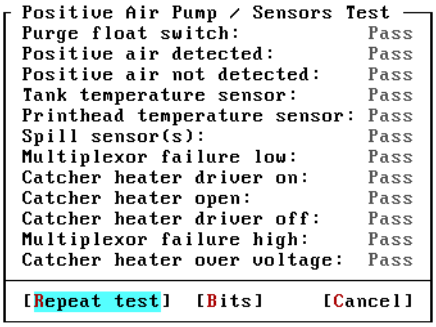
Ink Pump and Transducer

Select **Fluid Tests** → **Ink pump / transducer** to check the listed components. The test checks each component operation over a range of current and voltage.



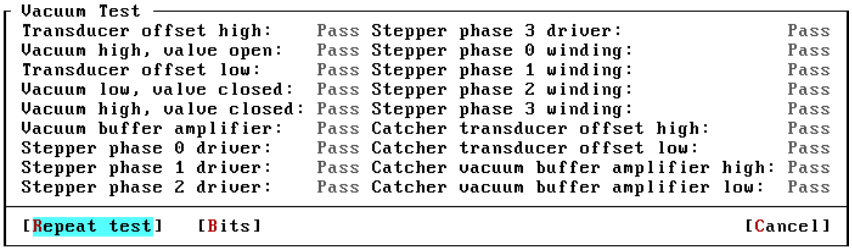
Positive Air Pump and Sensors

Select **Fluid Test** → **Positive air pump / sensors** to verify the proper operation of the listed components. The test checks each component operation over a range of current and voltage.



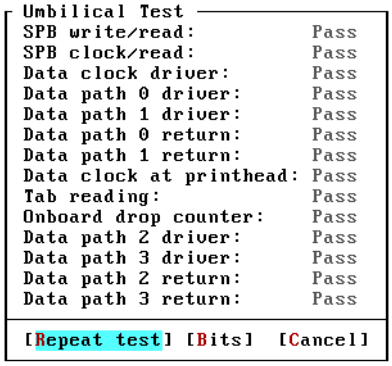
Vacuum

Select **Fluid Tests** → **Vacuum** to verify the presence of vacuum in the fluid system. The test checks the listed components over a range of operating settings.



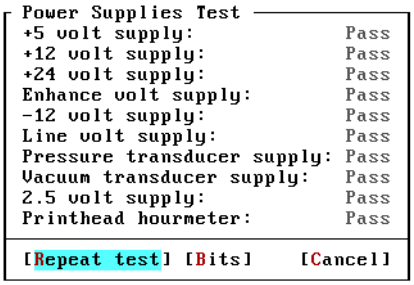
Umbilical

Select **Fluid Tests** → **Umbilical** to check the continuity of signals through the umbilical. The test checks the listed components over a range of operating settings.



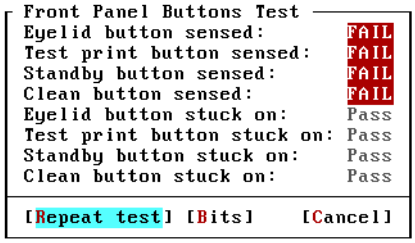
Power Supplies

Select **Fluid Tests** → **Power supplies** to verify the proper operation of the listed fluid system power components.



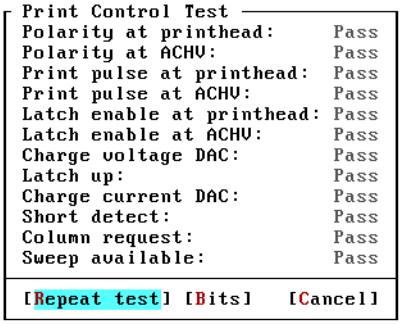
Front Panel Buttons

Select **Fluid Tests** → **Front panel buttons** to verify the proper operation of the listed printer buttons:



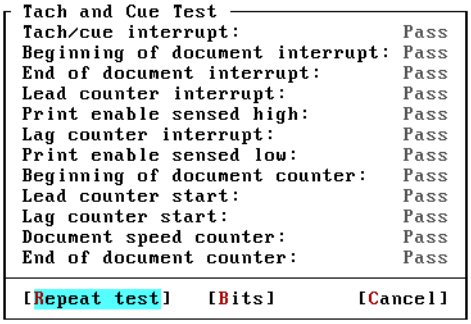
Print Control

Select **Fluid Tests** → **Print control** to check the control processes between the inkjet controller board and the printhead.



Tach and Cue

Select **Fluid Tests** → **Tach and cue** to verify the fluid system responses to tach and cue inputs.



Chapter 2. Messages

This chapter lists and explains printer and controller messages. The message lists are preceded by sections explaining how messages are displayed and how to clear message displays.

Message Contents

Messages are identified by number and divided into different series. Message contents consist of the following elements:

- Message types
- Message priorities
- Message information
- Message displays

Message Types

Messages are divided into the following categories:

- Printer messages

  Displayed by the printing system programs: MailScape, Jetscape Print Control, Control Panel, and Diagnostics.

- System controller messages

  Displayed by host software programs: Scitex programs MPC4, MPC4Prep, and earlier versions, as well as third-party programs.

Printer Messages

Message numbers and series displayed by the printer and printing system programs are listed in Table 2.1.

Table 2.1 Message number series, printer and system

Series	Prefix	Source	Note
0000-10999	None	Diagnostics	None
11000-11999	DS	Data system	DS = controller 03 Download = controller 04 K4K & tach = controller 05
12000-12999	-	-	Not used
13000-13999	IJ	Fluid system	IJ error = controller 06 IJ warning = controller 07
14000-14999	MC	Machine control	5000 printer only
15000-15999	DS2	Data system	
16000-16999	IJ2E	Fluid system	
17000-17999	-	-	Not used
18000-18999	FN2	Fonts	FN = controller 08
19000-19999	-	-	Not used
20000-99999	IJ2W	Fluid system	

Not all programs display the printer sub-system prefixes for messages. Table 2.2 summarizes the variations in message numbering displays.

Table 2.2 Message numbering variations, printer programs

Program	Number Style	Printer Sub-System Prefix[1]
Print Control	4-digit	No
Control Panel	4-digit	Yes - in report log
Diagnostics	4-digit	No
MailScape	5-digit	No
Custom controllers	4-digit	No

1. See Table 2.1.

System Controller Messages

Scitex controller software programs (MPC4 and earlier versions) use the message number series listed in Table 2.3. Other controller software programs may use these series or unique number series. See the controller documentation for detailed information on error displays.

Table 2.3 Message prefixes, controller software

Prefix	Error type	Notes
03xx	Data system	See example[1]
04xx	Download	
05xx	K4K and tach or resolution	
06xx	Inkjet and machine control	ERRORs
07xx	Inkjet and machine control	WARNINGs
08xx	Fonts	

1. 0313 = DS-13 Operator panel timeout error.

Message Priorities

Messages are assigned one of the following priorities based on severity:

- Information
  Reports job status and confirms completion of system operations.
- Warning
  Indicates that a problem which may affect printing has occurred.
- Error
  Indicates that a problem which prevents printing has occurred.
- Fatal
  Indicates a software failure or system controller problem that threatens the integrity of the software.
- Internal
  Indicates a software problem equivalent to a fatal error.

Message Information

Each message contains the following information elements:

- Message Text
  The message text is the actual text that is displayed by the software when the message is received. In the lists, variables are shown as letters in *italics*.
- Explanation
  A detailed description of the error follows the message text. Often this description provides an explanation or possible cause for the error.

- Suggested Action
  A suggested action is provided for each message, excluding information messages. For these messages, "None required" appears in place of an action. When a message contains more than one action, perform each action in the sequence described. If none of the suggested actions correct the problem, contact your supervisor for further instructions.

Message Displays

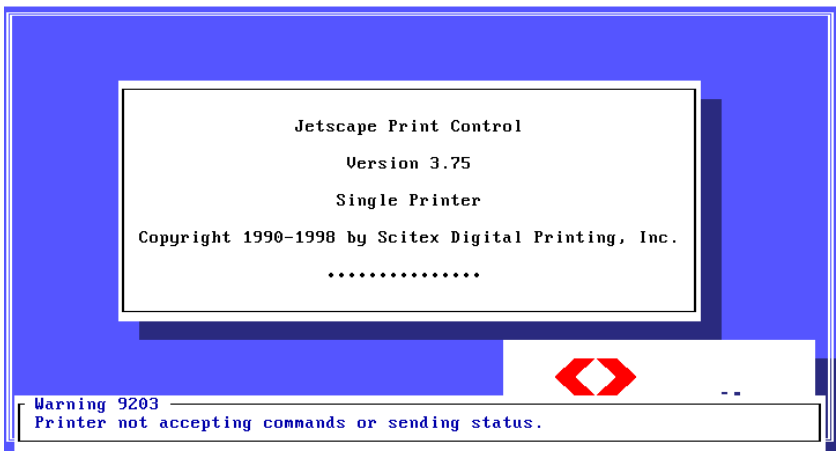
Printer messages are displayed in slightly different formats by each of the following printer programs:

- Jetscape Print Control
- Jetscape Diagnostics
- MailScape
- Scitex and third party system controllers (not shown)

Print Control Displays

Jetscape Print Control displays printer and system messages as they occur in a pop-up window (see Figure 2.1).

Figure 2.1 Print control error display

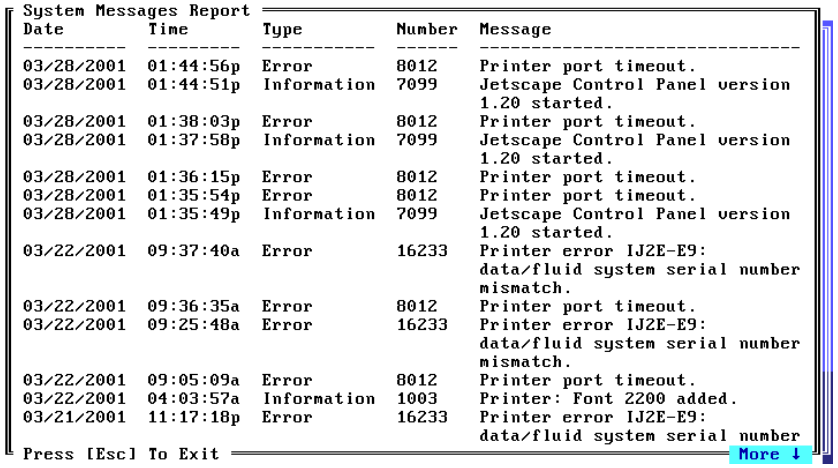


The most recent error can be displayed on the report summary screen (see Figure 2.2).

Figure 2.2 Print control error report summary

All messages can be displayed in the full report and in the error log or error list (see Figure 2.3).

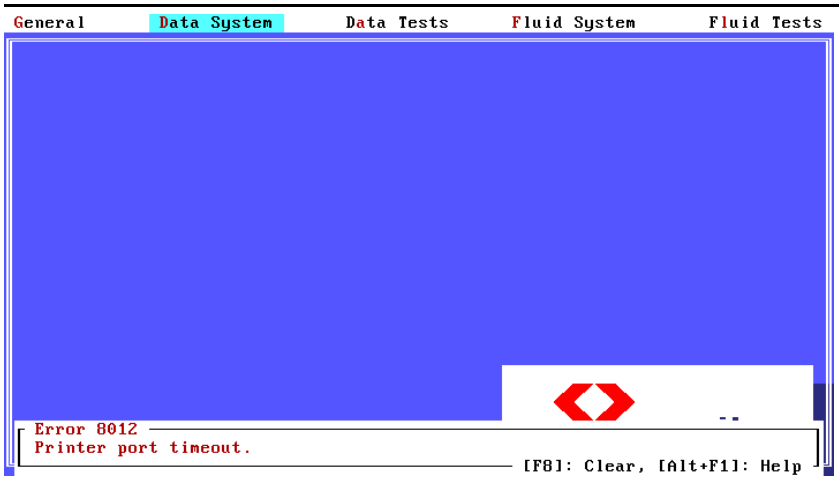
Figure 2.3 Print control error log



Diagnostics Displays

Diagnostics error displays appear as they occur in a pop-up window (see Figure 2.4).

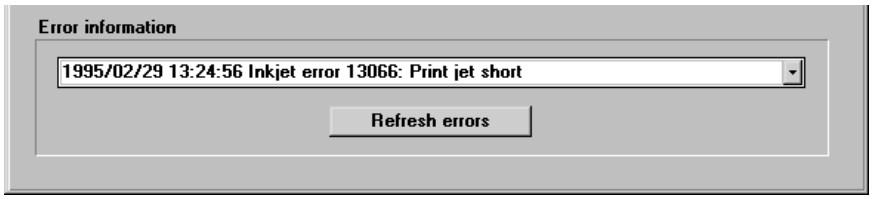
Figure 2.4 Jetscape Diagnostics error display



MailScape Displays

Mailscape error displays appear in a dedicated dialog box (see Figure 2.5 and the MailScape *Operator's Guide*).

Figure 2.5 MailScape error display



Clearing Errors

Error messages must be cleared before the suggested action can be performed. Take the following action to clear an error message:

- Press F8 on the printing system keyboard
- For a fluid system error, press the open eyelid button on the printer operator panel
- For an error that occurs when you open a dialog box, close and re-open that box
- Select ESC when that function is displayed
- Select [**C**ancel] in the pop-up box.

Note: The corrective actions given in the message lists should be done after clearing or acknowledging the message.

Printer Messages

The following list includes the messages that can be received while operating the printer using Diagnostics. The messages are listed in numerical order.

Caution: Powering the printer off deletes parameter settings. Perform a power off only after all other suggested actions fail to correct the problem.

0000 INTERNAL UNRECOGNIZED ERROR STATUS

Explanation: An internal error has occurred within Jetscape Diagnostics.

Action: Contact technical support.

1001 INTERNAL MEMORY ALLOCATION FAILURE

Explanation: A host software problem has occurred, caused by insufficient memory for the requested operation.

Action: Exit and restart the software.

1002 WARNING DIAGNOSTIC TEST FILE *XX* ACCESS FAILURE

Explanation: The Diagnostic test file used to record the results of each test and operation cannot be created or written.

Action: Verify that the correct file is specified in the Diagnostics User Preferences dialog box.

1010 INFORMATION PRINTER READY BEGUN

Explanation: The printer ready operation has begun.

Action: None required.

1011 INFORMATION PRINTER STANDBY BEGUN

Explanation: The printer standby operation has begun.

Action: None required.

1012 INFORMATION PRINTER DOWN BEGUN

Explanation: The printer down operation has begun.

Action: None required.

1013 INFORMATION PRINTER CLEAN BEGUN

Explanation: The printer clean operation has begun.

Action: None required.

2001 INFORMATION NO PENDING ERRORS IN ERROR LOG

Explanation: No errors have been recorded in the Data System Error Log in Diagnostics.

Action: None required.

2100 ERROR ERROR SIGNALED ON PARALLEL PORT

Explanation: An error has been detected on the parallel port used to conduct the test.

Action: Run diagnostics.

2200 INFORMATION DATA SYSTEM ERROR LOG REPORT COMPLETED

Explanation: The Diagnostics Error Log report has been successfully printed or written to disk.

Action: None required.

2901 INFORMATION PRINTER SETUP COMPLETED

Explanation: The printer setup has been sent and accepted.

Action: None required.

2910 INFORMATION ALL PRINT DATA, FONTS, AND CATALOGS DELETED

Explanation: All of the print data, fonts, and catalogs have been deleted using the Print Control Purge command.

Action: None required.

5201 INFORMATION DIAGNOSTICS TEST RESULTS REPORT COMPLETED

Explanation: The Diagnostics Test Results Report has been successfully completed.

Action: None required.

5202 WARNING START DATE NOT FOUND IN TEST FILE FOR DIAGNOSTICS TEST RESULTS REPORT

Explanation: A start date for the Test Results Report has not been specified for the Start parameter in the Test Results Report dialog box.

Action: Specify a start date.

5301 INFORMATION SYSTEM MESSAGES REPORT COMPLETED

Explanation: The System Messages Report has been printed or written to file on disk.

Action: None required.

5401 INFORMATION SYSTEM CONFIGURATION REPORT COMPLETED

Explanation: The System Configuration Report has been printed or written to file.

Action: None required.

6101 ERROR INVALID DATE OR TIME SPECIFIED

Explanation: An invalid value for the time or date has been entered.

Action: Verify the time or date and enter a valid value. The time must follow the format HH:MM:SS, a,p, where hours range from 00-23, minutes from 00-59, and seconds from 00-59. The date must follow the format MM-DD-YYYY, where month ranges from 01-12 and day from 01-31.

6202 WARNING PRINTER ASSIGNED TO SAME PORT AS LOG PRINTER

Explanation: A printer is assigned to the same port as the log printer.

Action: Change the printer port or change the log printer port assignment.

6204 WARNING PRINTER *XX* COMMUNICATIONS PORT *YY* NOT INSTALLED

Explanation: The port assigned to the printer is not installed.

Action: Verify that the correct port is specified. If the correct port is specified, run diagnostics.

6301 WARNING LOG PRINTER ASSIGNED TO SAME PORT AS THE PRINTER

Explanation: The log printer is assigned to the same port as the printer.

Action: Change the port assigned to the printer or change the log printer port assignment.

6302 WARNING LOG PRINTER PORT *XX* NOT INSTALLED

Explanation: The port assigned to the log printer is not installed.

Action: Change the port assignment for the log printer.

6401 ERROR FOREGROUND/BACKGROUND COLORS EQUAL

Explanation: The color selected for the screen foreground is too similar to the color selected for the background. The system does not accept this combination because it renders the screen displays unreadable.

Action: Change one screen color. Press F11 with this message displayed to see a list of alternate colors.

6501 WARNING INVALID CHARACTERS IN PASSWORD OR CONFIRMATION MISMATCH; PASSWORD IGNORED

Explanation: The specified password contains invalid characters or the password has been entered incorrectly.

Action: Enter the current password correctly or create a new password using A-Z and 0-9.

6901 INFORMATION SYSTEM CONFIGURATION SAVED

Explanation: The software has saved a new configuration. This message appears when you save system configuration parameter changes.

Action: None required.

6902 ERROR SYSTEM CONFIGURATION SAVE FAILED

Explanation: The system is unable to save the configuration.

Action: Run diagnostics.

7001 INTERNAL MEMORY ALLOCATION FAILURE

Explanation: A host software problem has occurred caused by insufficient memory for the requested operation.

Action: Exit and restart the software.

7002 WARNING SYSTEM CONFIGURATION NOT FOUND; FACTORY DEFAULTS IN EFFECT

Explanation: The system configuration file cannot be found after startup.

Action: Create a new system configuration or use the default configuration.

7099 INFORMATION SCITEX JETSCAPE *XXXXXXXXXXX* VERSION *N.NN* STARTED

Explanation: The system software is powered up.

Action: None required.

8001 INTERNAL MEMORY ALLOCATION FAILURE

Explanation: A host software problem has occurred caused by insufficient memory for the requested action.

Action: Exit and restart software.

8010 ERROR PRINTER *XX* PORT *YY* NOT INSTALLED

Explanation: The port assigned to the printer is not installed.

Action: Verify that the correct port is specified. If the port assignment is incorrect, change the port assignment. If the port assignment is correct, power printer off; then power on.

8011 ERROR PRINTER *XX* PORT FAULT: *YY*

Explanation: The printer is offline or an error has occurred.

Action: Place the printer online or take the action appropriate for the indicated error.

8012 WARNING PRINTER *XX* PORT TIMEOUT

Explanation: The printer has failed to respond to a command within the specified timeout period.

Action: Resend the command.

If problem persists, verify that the port settings are correct. Reset parameters if required. If problem persists, power printer off; then on.

8020 ERROR PRINTER *XX* COMMAND ECHO INVALID

Explanation: The data system (the host) has received an unexpected response from printer.

Action: Verify that the communication parameters are set so that printer and system controller communications settings match.

8021 WARNING PRINTER *XX* DOES NOT RECOGNIZE COMMAND

Explanation: Printer has responded to a command to indicate an invalid command.

Action: Verify that the communication parameters are set so that printer and system controller communications settings match.

8030 ERROR PRINTER *XX* RESPONSE INVALID

Explanation: The message received from the printer does not match the expected response.

Action: Check the printer for an error condition. If an error has occurred, take the appropriate action to correct error. If no error condition is reported, Power the printer off, then back on. Run diagnostics.

8040 WARNING PRINTER PARAMETER VALUE NOT ACCEPTED

Explanation: An incorrect value or value out of range has been entered for a parameter.

Action: Determine the selected parameter options or value ranges and change parameters accordingly.

8050 ERROR PRINTER DATA COMMAND TO FLUID SYSTEM PENDING

Explanation: Communication between the data system and the fluid system has failed.

Action: Power printer off; then on.

8051 ERROR FLUID SYSTEM COMMUNICATION FAILURE

Explanation: Communication between the system controller and the fluid system has failed.

Action: Power printer off; then on.

8052 ERROR PRINTER FLUID SYSTEM COMMAND *XX* REJECTED

Explanation: The command issued by the system controller to the fluid system has been rejected.

Action: Power printer off; then on.

8053 INFORMATION PRINTER FLUID SYSTEM COMMAND COMPLETED

Explanation: The requested fluid system command has been completed.

Action: None required.

8054 WARNING PRINTER FLUID SYSTEM RESPONSE INVALID

Explanation: The response to a fluid system command does not match the form expected.

Action: Power the printer off, then back on. Run diagnostics.

8055 WARNING PRINTER FLUID SYSTEM COMMAND TIMEOUT

Explanation: The fluid system command has not been completed within the expected time period.

Action: Power the printer off, then back on. Run diagnostics.

8056 WARNING PRINTER FLUID SYSTEM COMMAND STILL PENDING

Explanation: The fluid system has not finished performing the requested action.

Action: Wait until the fluid system has completed the requested command before sending the next command.

9911 INTERNAL MEMORY ALLOCATION FAILURE

Explanation: A host software problem has been caused by insufficient memory for the requested action.

Action: Exit and restart the software.

9912 WARNING HELP NOT AVAILABLE

Explanation: No help is available for the topic for which F1 (help) was pressed.

Action: None required.

9913 INFORMATION NO MESSAGES HAVE BEEN DISPLAYED

Explanation: A message report has been requested but no messages exist.

Action: None required.

9914 ERROR REPORT DISPLAY ERROR.

Explanation: A printer error has occurred while displaying a report.

Action: Check the disk space available on the hard drive. A minimum of 256 kilobytes of free disk space is required to display errors.

9921 ERROR LOG PRINTER PORT *XX* NOT INSTALLED

Explanation: The port assigned to the log printer is not installed.

Action: Change the port assignment for the log printer.

9922 ERROR LOG PRINTER FAULT: *XX*

Explanation: The log printer is offline or an error has occurred.

Action: Place the log printer online or correct the error using the procedures described in the log printer manual.

9923 ERROR LOG PRINTER NOT ACCEPTING DATA

Explanation: An error has occurred in the log printer.

Action: Correct the error using the procedures described in the log printer manual.

9931 INTERNAL MEMORY ALLOCATION FAILURE

Explanation: A host software problem has been caused by insufficient memory for the requested action.

Action: Exit and restart the software.

9932 ERROR REPORT FILE *XX* ACCESS FAILURE

Explanation: The program is unable to write the requested report to file.

Action: Verify that the specified file is not read-only or the specified disk drive is not empty.

10001 ERROR PRINTER *XX* ERROR *CODE*

Explanation: An unrecognized error code has been reported by the printer.

Action: Run diagnostics.

DS-00 ERROR 11000: DATA SYSTEM COMMAND REFUSED

Explanation: The printer application software has attempted to perform an invalid operating system function or has attempted to perform a valid function at a time when the operating system cannot perform the function.

Action: Restart the software and retry printing. If the problem persists (even intermittently), run diagnostics. The job setup information must be recorded and submitted to Scitex for analysis.

DS-02 ERROR 11002: NO DEFAULT FONT

Explanation: No default font has been specified or the default font has been removed. This error occurs when the system is powered on, following the power-on cycle.

Action: Verify that a default font has been selected; select a font (if required). If the default font has been deleted, download the font to the printer. Retry printing, starting with the first missing piece.

DS-03 ERROR 11003: INITIALIZATION ERROR OCCURRED

Explanation: An error has been detected while powering on the printer. This error is generated when the printer is brought online.

Action: Power printer off; then on. If the problem persists, contact your supervisor.

DS-04 ERROR 11004: NO RESPONSE FROM CG

Explanation: The character generator has failed to initialize the hardware.

Action: Run diagnostics.

DS-06 ERROR 11006: CG VERSION MISMATCH

Explanation: The software version of the character generator is incompatible with the software version of the data system.

Action: Run diagnostics.

DS-07 ERROR 11007: MC VERSION MISMATCH

Explanation: The software version of the inkjet controller system is incompatible with the software version of the data system.

Action: Run diagnostics.

DS-10 ERROR 11016: DATA SYSTEM BUS ERROR

Explanation: A bus error has occurred during a system memory access (such as an incomplete memory access).

Action: Restart the printer and retry printing. If the problem persists, run diagnostics.

DS-11 ERROR 11017: DIAGNOSTICS FAILURE

Explanation: Requested diagnostic test failed.

Action: Replace the component associated with the failed test (which is most likely the data system module).

DS-12 ERROR 11018: DATA SYSTEM SUPERVISOR TIMEOUT

Explanation: The data system has failed to complete an internal function in time.

Action: Power the printer off, then back on. Run diagnostics.

DS-13 ERROR 11019: OPERATOR PANEL TIMEOUT

Explanation: The last command sent to the operator panel has not been completed.

Action: Power the printer off, then back on. Run diagnostics.

DS-14 ERROR 11020: PRINTER RECONFIGURED; BUFFERS RESET

Explanation: The font cartridge containing the active font has been removed.

Action: Reinstall the cartridge and close font compartment door. Determine the starting piece by examining the printed images. run diagnostics if the problem persists. If the problem persists, contact technical support.

DS-15 ERROR 11021: 240DPI FONTS MISSING; REVERTING TO 120DPI

Explanation: The font door has been opened and one more required 240 dpi fonts removed. This error occurs in place of DS-2A, depending on the selected font and print resolution.

Action: Replace the required font cartridge and close the door.

DS-16 ERROR 11022: 120 DPI FONTS MISSING; REVERTING TO 240 DPI

Explanation: The font door has been opened and one or more required 240 dpi fonts have been removed. This error occurs in place of DS-2A, depending on the selected font and print resolution.

Action: Replace the font cartridge, close the font door, and press Clear.

DS-22 ERROR 11034: FONT COMPARTMENT DOOR AJAR

Explanation: The font compartment door is open.

Action: Close the door.

DS-23 ERROR 11035: LOST INK-JET CONTROLLER COMMUNICATIONS

Explanation: The inkjet controller did not respond to a command.

Action: Power the printer off, then back on. Run diagnostics.

DS-26 ERROR 11038: CG COMMUNICATION FAILURE

Explanation: The character generator does not respond to commands from the data system.

Action: Run diagnostics.

DS-27 ERROR 11039: OFFLINE TIMEOUT

Explanation: The last piece in the print buffer cannot be printed before the stop printing command (which stops the document transport) is initiated at the system controller.

Action: Continue printing, starting with the first missing piece. If the problem persists, power printer off, then back on and run diagnostics.

DS-28 ERROR 11040: PURGE DATA TIMEOUT

Explanation: Because a purge data function has taken too long to complete, the printer has timed out waiting for input processing to go offline.

Action: Continue printing, starting with the first missing piece. If the problem recurs, power the printer off, then back on and run diagnostics.

DS-29 ERROR 11041: OUTPUT OFFLINE TIMEOUT

Explanation: A timeout has occurred to prevent a formatted image from being printed when the printer is offline. The image has been lost.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

DS-2A ERROR 11042: FONT DOOR AJAR; PURGING DATA PATH

Explanation: The font door has been opened and either a font cartridge has been moved to a new slot, removed, or a new cartridge has been installed. This error occurs in place of DS-15, depending on the selected font and print resolution.

Action: Verify that all font cartridges needed for the job are installed. Close the door.

DS-40 ERROR 11064: SERIAL INTERFACE OVERRUN

Explanation: The printer has failed to receive incoming data in time.

Action: Check the system configuration. If the configuration is correct, run diagnostics. If the configuration is not correct, make the necessary changes.

DS-41 ERROR 11065: SERIAL INTERFACE PARITY ERROR

Explanation: The incoming character is garbled.

Action: Continue printing, starting with the first missing piece. If the problem persists, confirm that the serial configuration is correct. The following list provides the factory default settings for the configuration parameters:

- Data port = LPT1, LPT2, LPT3

- Data time out = 5
- Command port = COM2, COM3, COM4
- Command baud rate = 9600
- Command word size = 8
- Command parity = None
- Command stop bits = 1
- Command timeout = 5

If the configuration is correct, run diagnostics. If the configuration is not correct, make the necessary corrections.

DS-42 ERROR 11066: SERIAL INTERFACE FRAMING ERROR

Explanation: The incoming character is garbled or has been lost.

Action: Continue printing, starting with the first missing piece. If the problem persists, confirm the serial configuration is correct. The following list provides the factory default settings for the configuration parameters:

- Data port = LPT1, LPT2, LPT3
- Data time out = 5
- Command port = COM2, COM3, COM4
- Command baud rate = 9600
- Command word size = 8
- Command parity = None
- Command stop bits = 1
- Command timeout = 5

If the configuration is correct, run diagnostics. If the configuration is not correct, make the necessary corrections.

DS-43 ERROR 11067: SERIAL INTERFACE BUFFER ERROR

Explanation: The system controller does not accept the printer's communication protocol.

Action: Continue printing, starting with the first missing piece. If the problem persists, confirm the serial configuration is correct.

If the configuration is correct, run diagnostics. If the configuration is not correct, make the necessary changes.

DS-50 ERROR 11080: VME RAM MEMORY FAILURE

Explanation: The dynamic RAM test has failed during operation.

Action: Run diagnostics.

DS-60 ERROR 11096: INSUFFICIENT MEMORY FOR FONT LOAD

Explanation: Memory is insufficient to complete the requested font download.

Action: Re-evaluate the print job and delete unnecessary fonts.

DS-61 ERROR 11097: FONT LOAD FAILED; CHECKSUM ERROR

Explanation: An attempt has been made to download an encrypted font to the printer, which caused the checksum validation to fail. The problem may be caused by a corrupted font file or a problem with the data path or data system.

Action: Reload the font file to the system controller and retry the font download. If the problem persists, verify that the data path cable between the system controller and the printer is properly connected.

DS-62 ERROR 11098: FONT LOAD FAILED; FORMAT ERROR

Explanation: An attempt has been made to download an encrypted font to the printer, which caused the checksum validation to fail. The problem may be caused by a corrupted font file or a problem with the data path or data system.

Action: Reload the font file to the system controller and retry the font download. If the problem persists, verify that the data path cable between the system controller and the printer is properly connected.

DS-63 ERROR 11099: CATALOG LOAD FAILED; SIZE ERROR

Explanation: The downloaded catalog is too small.

Action: Re-calculate the catalog length and enter the correct value.

DS-64 ERROR 11100: INSUFFICIENT MEMORY FOR CATALOG LOAD

Explanation: The requested catalog download has failed because of insufficient memory.

Action: Re-evaluate the print job and remove unnecessary catalogs. Verify that the specified catalog sizes are correct.

DS-65 ERROR 11101: INVALID CHARACTER IN PARAMETER

Explanation: A non-hexadecimal value has been encountered in a hexadecimal field. This error usually originates in the character bit map information.

Action: Verify that the font being loaded is correct.

DS-66 ERROR 11102: FONT PARAMETER OUT OF RANGE

Explanation: One of the selected font parameters is out of range.

Action: Correct the font parameter that is out of range.

DS-67 ERROR 11103: INVALID FONT ORIENTATION OR RESOLUTION

Explanation: The resolution for the selected font does not match the resolution specified for the printer.

Action: Select a font with a resolution that matches the printer resolution or change the printer resolution to match the font resolution.

DS-68 ERROR 11104: FONT BITMAP LARGER THAN SPECIFIED SIZE

Explanation: The font bitmap is larger than the point size specified for the font.

Action: Change the font size to a size large enough to accommodate the bitmap.

DS-69 ERROR 11105: REQUIRED FONT PARAMETERS NOT SPECIFIED

Explanation: At least one font parameter has not been specified. All font parameters must appear in the downloaded font before the first character is defined.

Action: Identify the font parameter or parameters not specified.

DS-6B ERROR 11107: FONT DOWNLOAD ABORTED

Explanation: A command to abort the font download has been initiated at the system controller.

Action: None required.

DS-6D ERROR 11109: FONT ACCESS TABLE ERROR

Explanation: A duplicate font ID has been encountered or the font table is full.

Action: Evaluate the font file for duplicate or unnecessary font downloads; delete fonts as required.

DS-6E ERROR 11110: INVALID FONT PARAMETER

Explanation: An odd byte count has been encountered in a hexadecimal entry. Hex values are entered in a two-character format; check the font file for errors.

Action: Check the font file for errors in the hexadecimal values; correct the values as required.

DS-6F ERROR 11111: NO CHARACTERS IN FONT

Explanation: The font has been terminated before any characters could be defined.

Action: Define the font characters.

DS-70 ERROR 11112: REQUESTED FONT NOT FOUND

Explanation: The requested font is unavailable because the font has been removed or the wrong font number has been entered.

Action: Verify the font required for the job and verify that it appears in the font list. If the font does not appear in the list, download the font. Continue printing, starting with the first missing piece.

DS-71 ERROR 11113: ACTIVE FONT REMOVED

Explanation: A font used in the current image cannot be located. All pieces using the missing font have been removed from the print buffer. The default font is active.

Action: Verify the font required for the job and verify that it appears in the font list. If the font does not appear in the list, download the font. Continue printing, starting with the first missing piece.

DS-72 ERROR 11114: FONT ACCESS ERROR

Explanation: The font required for the requested character set language or mode is not available.

Action: Verify the font required for the job and verify that it appears in the font list. If the font does not appear in the list, download the font. Continue printing, starting with the first missing piece.

DS-73 ERROR 11115: FONT NOT AVAILABLE

Explanation: A font required to change orientation (to 0° or 180°) or piece direction (to Normal or Reverse) is not available.

Action: Verify the font required for the job and verify that it appears in the list of downloadable fonts. If the font does not appear in this list, download the font. Continue printing, starting with the first missing piece.

DS-80 ERROR 11128: K4K COMMAND SEQUENCE ERROR

Explanation: An invalid command sequence has been sent to the K4K interface.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-82 ERROR 11130: K4K LINK ESTABLISHMENT ERROR

Explanation: An error has occurred while establishing the link to the K4K interface.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-83 ERROR 11131: K4K BUFFER RELEASE ERROR

Explanation: An error has occurred during the release of the K4K internal buffer.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-84 ERROR 11132: K4K BUFFER REQUEST ERROR

Explanation: An error has occurred during a K4K internal buffer request.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-85 ERROR 11133: K4K BUFFER RELEASE/REQUEST ERROR

Explanation: An error has occurred during a K4K internal buffer request or release.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-86 ERROR 11134: K4K OFFLINE ERROR

Explanation: An error has occurred during a request for offline mode.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-87 ERROR 11135: K4K DIAGNOSTIC TEST ERROR

Explanation: An error has occurred while releasing a K4K internal buffer.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-88 ERROR 11136: K4K RESTART ERROR

Explanation: An error has occurred while requesting a restart.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-91 ERROR 11145: K4K POWER-UP DIAGNOSTIC TIMEOUT

Explanation: A timeout has occurred during the power-on cycle. The K4K board may be defective.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-92 ERROR 11146: K4K LINK ESTABLISHMENT TIMEOUT

Explanation: A timeout has occurred while establishing the K4K link to the system controller.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-93 ERROR 11147: K4K BUFFER RELEASE TIMEOUT

Explanation: A timeout has occurred while releasing a K4K internal buffer.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-94 ERROR 11148: K4K BUFFER REQUEST TIMEOUT

Explanation: A timeout has occurred during a request for a K4K internal timeout buffer.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-95 ERROR 11149: K4K BUFFER RELEASE/REQUEST TIMEOUT

Explanation: A timeout has occurred during the release or request of a K4K internal buffer.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-96 ERROR 11150: K4K OFFLINE TIMEOUT

Explanation: A timeout has occurred during an offline mode request.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-97 ERROR 11151: K4K RESTART TIMEOUT

Explanation: A timeout has occurred during a restart request.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-98 ERROR 11152: K4K UNEXPECTED HEADER RECEIVED

Explanation: A header normally sent only after a reset has been received at an inappropriate time.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-99 ERROR 11153: K4K REQUIRED HEADER MISSING

Explanation: The required ADMARK setup block has not been received before the data. The setup block is missing or the header contains an error and has been rejected.

Action: Perform a reset from the host and restart the job.

DS-9E ERROR 11158: K4K PURGE BUFFER TIMEOUT

Explanation: An error has occurred during a requested restart.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A1 ERROR 11161: K4K HEADER ERROR; INVALID IMAGES PER PIECE

Explanation: The value for images/piece in header position 5 in invalid.

Action: Change the value to an ASCII 1 or space character; retry printing.

DS-A2 ERROR 11162: K4K HEADER ERROR; INVALID LINES PER PIECE

Explanation: The image height value in header position 1 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A3 ERROR 11163: K4K HEADER ERROR; INVALID IMAGE WIDTH

Explanation: The image width value in header positions 2-4 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A4 ERROR 11164: K4K HEADER ERROR; INVALID POSITION

Explanation: Character position 1, line 1 of the image, header positions 6-8, is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A5 ERROR 11165: K4K HEADER ERROR; INVALID ORIENTATION

Explanation: The image orientation value in header position 16 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A6 ERROR 11166: K4K HEADER ERROR; INVALID SORT ACTIVATE

Explanation: The sort mode value in header position 21 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A7 ERROR 11167: K4K HEADER ERROR; INVALID OUTPUT MODE

Explanation: The sort output mode value in header position 72 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A8 ERROR 11168: K4K HEADER ERROR; INVALID SORT LINE

Explanation: The sort line number value in header position 17 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-A9 ERROR 11169: K4K HEADER ERROR; INVALID SORT COLUMN

Explanation: The sort column position value in header positions 18-20 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-AA ERROR 11170: K4K HEADER ERROR; INVALID DURATION (A)

Explanation: The sort code A duration value in header positions 22-24 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-AB ERROR 11171: K4K HEADER ERROR; INVALID DURATION (B)

Explanation: The sort code B duration value in header positions 27-29 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-AC ERROR 11172: K4K HEADER ERROR; INVALID DURATION (C)

Explanation: The sort code C duration value in header positions 32-34 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-AD ERROR 11173: K4K HEADER ERROR; INVALID DURATION (D)

Explanation: The sort code D duration value in header positions 37-39 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-AE ERROR 11174: K4K HEADER ERROR; INVALID DURATION (E)

Explanation: The sort code E duration value in header positions 42-44 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-AF ERROR 11175: K4K HEADER ERROR; INVALID DELAY (A)

Explanation: The sort code A delay value in header positions 25-26 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-B0 ERROR 11176: K4K HEADER ERROR; INVALID DELAY (B)

Explanation: The sort code B delay value in header positions 30-31 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-B1 ERROR 11177: K4K HEADER ERROR; INVALID DELAY (C)

Explanation: The sort code C delay value in header positions 35-36 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-B2 ERROR 11178: K4K HEADER ERROR; INVALID DELAY (D)

Explanation: The sort code D delay value in header positions 40-41 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-B3 ERROR 11179: K4K HEADER ERROR; INVALID DELAY (E)

Explanation: The sort code E delay value in header positions 45-46 is invalid.

Action: Try to continue printing. If the problem persists, run diagnostics.

DS-C0 ERROR 11192: INVALID LEFT MARGIN VALUE

Explanation: The left margin of a field exceeds the image size.

Action: Change the values entered for Top Left X and Top Left Y in the Print Control Field Layout dialog box so that the values do not exceed the image size. Continue printing, starting with the first missing piece.

DS-C1 ERROR 11193: INVALID RIGHT MARGIN VALUE

Explanation: The right margin for a field either exceeds the image size or falls short of the left margin +0.5 in. (1.27 cm).

Action: Change the values entered for Bottom Right X and Bottom Right Y in the Print Control Field Layout dialog box so that the values do not exceed the image size or fall short of the left margin. Continue printing, starting with the first missing piece.

DS-C2 ERROR 11194: TACH RATE INCOMPATIBLE WITH RESOLUTION

Explanation: A 120 dpi tach has been selected with a 240x480 font resolution.

Action: Replace the 120 tach with a 240 tach.

DS-C3 ERROR 11195: TACH RATE INCOMPATIBLE WITH RESOLUTION

Explanation: A 960 tach has been selected with a 120x120 resolution.

Action: Replace the tach with a 120, 240, or 480 tach.

DS-D0 ERROR 11208: NO PRIMARY FLASH CARD

Explanation: The primary flash card could not be located when an attempt was made to download the printer software.

Action: Verify that the card is present and properly seated in the slot. Reload the printer software. If the problem persists, replace the flash card.

DS-D1 ERROR 11209: INVALID SECONDARY FLASH CARD

Explanation: The secondary flash card, used for font storage and downloaded software, is either not recognized or formatted incorrectly.

Action: Replace the flash card.

DS-D2 ERROR 11210: SYSTEM SOFTWARE FORMAT INVALID

Explanation: The system software being downloaded has been corrupted.

Action: Verify that the correct file has been downloaded. Download the software again. If the problem persists, contact technical support.

DS-D3 ERROR 11211: POWER-UP SOFTWARE FORMAT INVALID

Explanation: The power-up software being downloaded has been corrupted.

Action: Verify that the correct file has been downloaded. Download the software again. If the problem persists, contact technical support.

DS-D4 ERROR 11212: INSUFFICIENT MEMORY FOR FONT DOWNLOAD

Explanation: The system memory available for the font download to the flash card is insufficient.

Action: Select the Font Setup command from the appropriate Printer menu; select the Purge All Fonts action to delete any fonts or print data in memory. Download the font again.

DS-D5 ERROR 11213: FLASH CARD IS WRITE-PROTECTED

Explanation: The flash card is write-protected.

Action: Move the switch on the card and try the operation again.

DS-D6 ERROR 11214: INSUFFICIENT SPACE ON FLASH CARD

Explanation: The space available on the flash card for the font is insufficient.

Action: Install a larger flash card, or change the font.

DS-D7 ERROR 11215: FLASH CARD VERIFY FAILED

Explanation: The flash card has failed; flash card information could not be read from the card after it was written.

Action: Replace the flash card.

DS-D8 ERROR 11216: INSUFFICIENT MEMORY FOR SOFTWARE DOWNLOAD

Explanation: The system memory available to download the software to the flash card is insufficient.

Action: Select the Font Setup command from the appropriate Printer menu; select the Purge All Fonts action to delete any fonts or print data in memory. Download the software again.

DS-D9 ERROR 11217: SOFTWARE CAN NOT BE DOWNLOADED AT THIS TIME

Explanation: Software can not be downloaded when the printer is in Ready mode, a diagnostic test is in progress, or the fluid system is changing states.

Action: Wait until the current operation is completed; download the software again.

DS-DA ERROR 11218: FONT CAN NOT BE DOWNLOADED AT THIS TIME

Explanation: Fonts can not be downloaded when the printer is in Ready mode, a diagnostic text is in progress, or the fluid system is changing states.

Action: Wait until the current operation is completed; download the software again.

DS-E1 ERROR 11225: FLUID SYSTEM SOFTWARE FORMAT INVALID

Explanation: The software being downloaded has been corrupted.

Action: Verify that the correct file has been downloaded. Download the software again. If the problem persists, contact technical support.

DS-E2 ERROR 11226: FLUID SYSTEM SOFTWARE FORMAT INVALID

Explanation: The software being downloaded has been corrupted.

Action: Verify that the correct file has been downloaded. Download the software again. If the problem persists, contact technical support.

DS-E3 ERROR 11227: FLUID SYSTEM COMMUNICATIONS FAILURE DURING DOWNLOAD

Explanation: Communications between the data and fluid system have failed during the download process.

Action: Power printer off; then on. Repeat the download. If the problem persists, contact technical support.

DS-E4 ERROR 11228: FLUID SYSTEM SOFTWARE DOWNLOAD FAILED

Explanation: The fluid system software download has failed.

Action: Replace the inkjet controller board firmware, or contact technical support.

DS-E5 ERROR 11229: INSUFFICIENT MEMORY FOR FLUID SYSTEM SOFTWARE DOWNLOAD

Explanation: The system memory available for downloading software to the fluid system is insufficient.

Action: Select the Font Setup command from the appropriate Printer menu; select the Purge All Fonts action to delete any fonts or print data in memory. Try downloading the fluid system software again. If the problem persists, contact technical support.

DS-E6 ERROR 11230: FLUID SYSTEM SOFTWARE CANNOT BE DOWNLOADED AT THIS TIME

Explanation: Fonts cannot be downloaded when the printer is in Ready mode, a diagnostic text is in progress, or the fluid system is changing states.

Action: Wait until the current operation is complete and try downloading the fonts again.

Note: All inkjet (IJ) errors automatically turn the fluid system off. To continue printing, turn the fluid system on.

IJ-14 ERROR 13020: FLOAT SWITCH FAILED

Explanation: The float switch has failed.

Action: Power the printer off, then back on. Run diagnostics if the problem persists.

IJ-16 ERROR 13022: POSITIVE AIR PUMP NOT WORKING

Explanation: The positive air pump has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-17 ERROR 13023: CATCHER HEATER DRIVER FAILED

Explanation: The catcher heater driver has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-18 ERROR 13024: INK PUMP VOLTAGE HIGH

Explanation: The ink pump voltage has exceeded state table maximum.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-19 ERROR 13025: INK PUMP VOLTAGE LOW

Explanation: The ink pump voltage has failed to reach state table minimum limit.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-1A WARNING 13026: FRONT PANEL COMMAND

Explanation: An operator panel button has been pushed on the printer.

Action: Continue printing, starting with the first missing piece.

IJ-IB **WARNING** **13027: POWER OFF**

Explanation: The POWER ON button on the operator panel has been pushed, causing power to the printer to be turned off.

Action: No action required if printer is to be turned off. If printer is to be turned on, press the POWER ON button.

IJ-29 **ERROR** **13041: INTERRUPT ENABLE PORT FAILED POC**

Explanation: The inkjet controller interrupt enable port has failed during the POC test.

Action: Power the printer off, then back on.

IJ-30 **ERROR** **13048: AC RELAYS FAILED POC**

Explanation: The AC relays have failed the POC test.

Action: Power the printer off, then back on.

IJ-31 **ERROR** **13049: SOLENOIDS AND CATCHER HEATER OUTPUTS FAILED POC**

Explanation: The solenoids and catcher heater outputs have failed the POC test.

Action: Power the printer off, then back on.

IJ-32 **ERROR** **13050: PRINT MODE CONTROL FAILED POC**

Explanation: The inkjet print mode control has failed the POC test.

Action: Power the printer off, then back on.

IJ-33 **ERROR** **13051: TACH AND CUE FAILED POC**

Explanation: The inkjet tach and cue have failed the POC test.

Action: Power the printer off, then back on.

IJ-34 **ERROR** **13052: SOLENOID MOTION FAILED POC**

Explanation: A solenoid motion failure has been detected during the POC test.

Action: Power the printer off, then back on.

IJ-35 **ERROR** **13053: INK PUMP/TRANSDUCER FAILED POC**

Explanation: The ink pump and/or transducer has failed the POC test.

Action: Power the printer off, then back on.

IJ-36 **ERROR** **13054: POSITIVE AIR PUMP/SENSORS FAILED POC**

Explanation: The positive air pump or miscellaneous sensors have failed the POC test.

Action: Power the printer off, then back on.

IJ-37 ERROR 13055: VACUUM FAILED POC

Explanation: The vacuum system has failed the POC test.

Action: Power the printer off, then back on.

IJ-38 ERROR 13056: UMBILICAL FAILED POC

Explanation: The umbilical has failed the POC test.

Action: Power the printer off, then back on.

IJ-39 ERROR 13057: POWER SUPPLIES FAILED POC

Explanation: The power supplies have failed the POC test.

Action: Power the printer off, then back on.

IJ-3A ERROR 13058: PURGE FILL MOTION FAILED

Explanation: A purge motion failure has been detected.

Action: Power the printer off, then back on.

IJ-3B ERROR 13059: GAP MOTION FAILED

Explanation: A gap motion failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-3C ERROR 13060: PURGE INPUT MOTION FAILED

Explanation: A purge input motion failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-3D ERROR 13061: CATCHER SOLENOID MOTION FAILED

Explanation: A catcher solenoid motion failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-3E ERROR 13062: PURGE OUTPUT MOTION FAILED

Explanation: A purge output motion failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-3F ERROR 13063: EYELID MOTION FAILED

Explanation: An eyelid motion failure has been detected.

Action: Continue printing, starting with the first missing piece. If the problem reappears, power the printer off, then back on and run diagnostics.

IJ-40 ERROR 13064: NO INK SYSTEM MODE SELECTED

Explanation: The system select switch on the inkjet main module is set incorrectly.

Action: Retry printing.

IJ-41 ERROR 13065: VACUUM SYSTEM NOT WORKING

Explanation: The vacuum is too low during a vacuum test, bring-up state, or in ready state.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-42 ERROR 13066: PRINT JET SHORT

Explanation: A printhead malfunction has been detected.

Action: Clean the printhead. Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-43 ERROR 13067: STIMULATION UNDER AMPLITUDE

Explanation: The stimulation control or head electrical connector has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-44 ERROR 13068: STIMULATION OVER AMPLITUDE

Explanation: A stimulation control failure has been detected.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-45 ERROR 13069: POWER FAILURE DETECTED BY MC

Explanation: Electrical noise or momentary power failure has been detected.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-46 ERROR 13070: VACUUM SYSTEM RESTRICTED

Explanation: The vacuum has failed or is too high during the VAC test, bring-up state, or in Ready state.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-47 ERROR 13071: INK SPILL IN CABINET

Explanation: Ink has spilled on the sensor in spill tray.

Action: Run diagnostics.

IJ-48 ERROR INK STREAKERS DETECTED

Explanation: This error code is not supported.

Action: If this message appears, contact technical support (see “Scope”).

IJ-49 ERROR 13073: MAXIMUM STATE TIME EXCEEDED IN TABLE

Explanation: The maximum state time has been exceeded while the fluid was manually stepped through a state table.

Action: Run diagnostics.

IJ-4A ERROR 13074: STIMULATION FAILED

Explanation: A stimulation failure has been detected.

Action: Continue printing, starting with the first missing piece.

If the problem persists, power the printer off, then back on and run diagnostics.

IJ-4C ERROR 13076: CATCHER HEATER SHORT

Explanation: The catcher heater or driver has failed; or a printhead electrical connector has short circuited.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-4D ERROR 13077: CATCHER HEATER OPEN

Explanation: The catcher heater or driver has failed, a printhead electrical connector has short circuited, or the printhead is unlatched.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-4E ERROR 13078: INK HEATER CONTROL FAILED

Explanation: The ink control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-4F ERROR 13079: INK PRESSURE HIGH

Explanation: The fluid system is blocked or a pump control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-50 ERROR 13080: INK PRESSURE LOW

Explanation: The fluid system or pump control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-51 ERROR 13081: PRINTHEAD INK TEMPERATURE HIGH

Explanation: The environmental temperature is too high or the heater control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-52 ERROR 13082: PRINTHEAD INK TEMPERATURE LOW

Explanation: The environmental temperature is too low; or the heater or heater control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-53 ERROR 13083: INK TANK TEMPERATURE HIGH

Explanation: The environmental temperature is too high or the heater control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-54 ERROR 13084: INK TANK TEMPERATURE LOW

Explanation: The environmental temperature is too low; or the heater of heater control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-55 ERROR 13085: ANTI-SIPHON VALVE FAILURE

Explanation: No inlet valve motion has been detected, or there is no pressure in the inlet line.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-56 ERROR 13086: CROSS-FLUSH VALVE MOTION NOT DETECTED

Explanation: A cross-flush valve motion failure has been detected.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-57 ERROR 13087: INK-JET POWER SUPPLY FAILURE

Explanation: The fuse in the power supply has blown or the power supply has failed.

Action: Power the printer off, then back on.

IJ-58 ERROR 13088: INK PUMP CURRENT HIGH

Explanation: The ink pump or pump control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-59 **ERROR** **13089: INK PUMP CURRENT LOW**

Explanation: The ink pump or pump control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-5A **ERROR** **13090: INK PUMP RPM HIGH**

Explanation: The ink pump or pump control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-5B **ERROR** **13091: INK PUMP RPM LOW**

Explanation: The ink pump or pump control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-5C **ERROR** **13092: INK FILL VALVE MOTION NOT DETECTED**

Explanation: The ink fill valve has failed.

Action: Run diagnostics: **Fluid system** → **Power on confidence tests**, and **Solenoid motion**. If you cannot isolate and correct the problem, contact technical support.

IJ-5D **ERROR** **13093: INK TANK LEVEL HIGH**

Explanation: The ink tank refill valve or the float has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-5E **WARNING** **13094: INK BOTTLE EMPTY**

Explanation: The ink supply is low or ink tank refill valve or the float has failed.

Action: Check the level in the ink bottle and replace if empty. Continue printing, starting with the first missing piece.

IJ-5F **ERROR** **13095: STARTUP TEMPERATURE FAILED**

Explanation: The ink temperature has warmed to less than 65°F (18°C).

Action: Run diagnostics: **Fluid system** → **Power on confidence tests**, and **Solenoids and catcher heater outputs**. If you cannot isolate and correct the problem, contact technical support.

IJ-61 **ERROR** **13097: PRINTHEAD CONTROL FAILED**

Explanation: Under stimulation, a printhead electrical connector or printhead control has failed.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-62 ERROR 13098: INK LEVEL OUTPUT FAILED

Explanation: An ink level output failure has been detected.

Action: Continue printing, starting with the first missing piece. If the problem persists, power the printer off, then back on and run diagnostics.

IJ-63 ERROR 13099: INK WILL NOT WARM UP

Explanation: The ink has taken too long to warm up from a cold start, or the heater control has failed (indicated by no significant change in ink temperature during the warmup period).

Action: Power the printer off, then back on.

IJ-64 ERROR 13100: EYELID CONTROL FAILED

Explanation: The eyelid did not remain open.

Action: Open the eyelid and try to continue printing. If the problem persists, Power the printer off, then back on. Run diagnostics.

IJ-69 ERROR 13105: TRANSDUCER OVER RANGE

Explanation: A transducer reading exceeds the valid range.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-6A ERROR 13106: TRANSDUCER UNDER RANGE

Explanation: A transducer reading is below the valid range.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-70 WARNING 13112: REPLENISH BOTTLE EMPTY

Explanation: The replenish fluid is low; or the replenish tank refill valve or float has failed.

Action: Check the replenish fluid level and replace the bottle if fluid is low. Continue printing, starting with the first missing piece.

IJ-71 ERROR 13113: REPLENISH SOLENOID MOTION FAILED

Explanation: The replenish solenoid has failed to open.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-72 ERROR 13114: BROWN OUT DETECTED

Explanation: A brown out condition has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-73 ERROR 13115: WATCH DOG CIRCUIT DISABLED

Explanation: The watch dog circuit is disabled.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-74 ERROR 13116: BATTERY BACKED-UP RAM FAILED

Explanation: The battery backed-up RAM has failed.

Action: Power the printer off, then back on.

IJ-75 ERROR 13117: MULTIPLE SOLENOID MOTION FAILURES

Explanation: Multiple solenoid motion failures have been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-77 ERROR 13119: CUE BUFFER OVERRUN

Explanation: Too many leading edges (or cues) have been detected between the cue sensor and the printhead.

Action: Clear the error and try to continue printing. If the problem persists, run diagnostics.

IJ-78 ERROR 13120: VACUUM ADJUST FAILED

Explanation: A vacuum adjust failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-79 ERROR 13121: PRINTHEAD DETECT FAILED

Explanation: The printhead is not detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-7A ERROR 13122: XILINX 3 FAILED

Explanation: A Xilinx 3 failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-7B ERROR 13123: XILINX PROGRAM FAILED

Explanation: A Xilinx program failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-7C ERROR 13124: PRINTHEAD CONNECTION FAILED

Explanation: A printhead connection failure has been detected.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-7D ERROR 13125: CATCHER TEMPERATURE TOO HIGH

Explanation: The catcher heater circuit is faulty or the print speed is too fast.

Action: Run diagnostics: **Fluid system → Power on confidence tests**, and **Solenoids and catcher heater outputs**. If you cannot isolate and correct the problem, contact technical support.

IJ-7E ERROR 13126: LATCH UP ERROR

Explanation: The charge driver IC has malfunctioned.

Action: Run diagnostics: **Fluid system → Power on confidence tests**, and **Umbilical**. If you cannot isolate and correct the problem, contact technical support.

IJ-7F ERROR 13127: INK-JET COMMAND TIMEOUT

Explanation: The inkjet system is not responding to commands from the data system.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-99 ERROR 13153: A TO D CONVERTER CHECK FAILED

Explanation: A check of the A and D converter has failed.

Action: Power the printer off, then back on. Continue printing, starting with the first missing piece.

IJ-F0 ERROR 13240: COMMAND REJECTED

Explanation: A command has been rejected by the fluid system because the command cannot be performed at this time or the parameter is invalid.

Action: Verify that the printer is in Standby and the parameter value is valid.

IJ-F1 ERROR 13241: COMMAND REJECTED DURING AUTO-POC

Explanation: The fluid system is not accepting commands because it has not completed the POC performed at powerup.

Action: Wait until the POC is complete before sending a command.

IJ-F2 ERROR 13242: COMMAND REJECTED DURING DIAGNOSTICS TEST

Explanation: A command has been rejected because the fluid system is performing the POC test.

Action: Wait until the POC test is completed and issue the command again.

MC-01 ERROR 14001: SOFTWARE VERSION MISMATCH

Explanation: The machine control and inkjet system software versions are incompatible.

Action: Retry printing.

MC-03 ERROR 14003: CUE BUFFER OVERRUN

Explanation: Too many leading edges (cues) have been detected between the cue sensor and the printhead.

Action: Retry printing.

MC-05 ERROR 14005: CUE OVERRUN

Explanation: The leading edge has been detected but there is no data to print.

Action: Retry printing. Check the source and amount of data or reduce the substrate feed rate.

MC-08 ERROR 14008: PIECE OVERRUN

Explanation: The data for a line of text exceeds the image length.

Action: Retry printing. If the problem reappears, redesign and reprogram the image data, select a smaller font, or increase the image length.

DS2-D0 ERROR 15208: CLEAR DATA FAILED

Explanation: An attempt to clear the print buffer from the Online Operations dialog box has failed.

Action: Power the printer off, then back on. Run diagnostics.

IJ2E-04 ERROR 16004: INSUFFICIENT SPACE BETWEEN CUES OR FAILED TACH

Explanation: The space between cues is insufficient or the tach signal has failed.

Action: Adjust cue sensor and/or tachometer as required.

IJ2E-E1 ERROR 16225: INVALID FLUID SYSTEM RESPONSE

Explanation: An invalid command response has been received from the fluid system.

Action: Power the printer off, then back on. Run diagnostics.

IJ2E-E2 ERROR 16226: INTERNAL COMMUNICATIONS ERROR

Explanation: An internal command formatting error has occurred on the command sent from the data system to the fluid system.

Action: Run diagnostics. If you cannot isolate and correct the problem, contact technical support.

IJ2E-E3 ERROR 16227: INTERNAL COMMUNICATIONS ERROR

Explanation: The data system has sent multiple commands to the fluid system without receiving a response.

Action: Run diagnostics. If you cannot isolate and correct the problem, contact technical support.

IJ2E-E4 ERROR 16228: INTERNAL COMMUNICATIONS ERROR

Explanation: An internal parameter is out of range.

Action: Power the printer off, then back on. Run diagnostics.

IJ2E-E5 ERROR 16229: FLUID SYSTEM COMMUNICATIONS ERROR

Explanation: An internal command has not been sent to the fluid system.

Action: Run diagnostics. If you cannot isolate and correct the problem, contact technical support.

IJ2E-E6 ERROR 16230: FLUID SYSTEM COMMUNICATIONS ERROR

Explanation: An internal protocol error, such as a parity error, has occurred.

Action: Run diagnostics. If you cannot isolate and correct the problem, contact technical support.

IJ2E-E7 ERROR 16231: FLUID SYSTEM RESPONSE TIMEOUT

Explanation: The data system sent a command to the fluid system but the fluid system failed to respond within the specified time period.

Action: Power the printer off, then back on. Run diagnostics.

IJ2E-E8 ERROR 16232: FLUID SYSTEM COMMAND SEQUENCE ERROR

Explanation: The fluid system was unable to complete a status exchange before a command was sent from the system controller.

Action: Power the printer off, then back on. Run diagnostics.

IJ2E-E9 ERROR 16233: DATA FLUID SYSTEM SERIAL *XX* MISMATCH

Explanation: An invalid serial number has been entered for either the data system or IJC PCB.

Action: Check the serial numbers entered for the data system and IJC PCB in Diagnostics. Correct the serial numbers as required.

FN2-61 ERROR 18097: FONT CANNOT BE DOWNLOADED AT THIS TIME

Explanation: Fonts cannot be downloaded when the printer is in Ready mode, a diagnostic test is in progress, or the fluid system is changing states.

Action: Wait until the current operation is complete and download the font again.

FN2-81 ERROR 18129: INVALID FONT ID

Explanation: An invalid font ID number has been detected.

Action: Replace flash card.

FN2-82 ERROR 18130: FONT ID *XX* OUT OF RANGE

Explanation: An invalid font ID number has been detected.

Action: Assign a new font ID number (1-19999) to the font.

FN2-83 ERROR 18131: INSUFFICIENT SPACE IN FONT ACCESS TABLE

Explanation: The font access table is full.

Action: Re-evaluate the print job and eliminate unnecessary fonts.

FN2-84 ERROR 18132: INVALID FONT VERSION IN FLASH CARD

Explanation: An incompatible font version has been detected on the flash card.

Action: Run diagnostics. If you cannot isolate and correct the problem, contact technical support.

FN2-85 ERROR 18133: FONT RESOLUTION DOES NOT MATCH PRINTER RESOLUTION

Explanation: An attempt was made to download a font of a different resolution than the current printer resolution.

Action: In multiple printer configurations, verify that the data and command communications are set correctly.

FN2-8E ERROR 18142: INSUFFICIENT MEMORY FOR FLASH CARD

Explanation: Memory is insufficient to allow all fonts on the installed flash card to be loaded.

Action: Evaluate font usage to determine if all fonts are required. If all fonts are required, memory may need to be expanded to allow for more fonts. A request for a flash card containing fewer fonts may also be considered. If you are using a 5240 printer at a print resolution of 240x480, you will need to upgrade your memory to 32M. Contact your Scitex representative.

Chapter 3. Diagnostic Test Routines

This chapter provides the following tables for use in conjunction with Jetscape Diagnostics to troubleshoot printer problems:

- Table 3.1, “Fault (error) codes and corresponding DTRs”
- Table 3.2, “DTR procedures”
- Table 3.3, “Bit definitions”

Use these tables to identify which tests to run to isolate a failed component.

Caution: Before performing fluid system tests with the printhead covers removed, the lockout actuator switch tool must be installed (see “Lockout Switch Tool” on page C-4 in Appendix C).

Problem Isolation

Use the following procedure to isolate a problem:

1. If an error message is associated with the problem, find that message number in the “Fault” column of Table 3.1.
2. If no error was associated with the problem, find the “Description” that most closely matches the problem.
3. Identify the first DTR to be performed listed in the “Go To Step” column.
4. Find that indicated step in Table 3.2 and perform take the recommended action.

Table 3.1 Fault (error) codes and corresponding DTRs

Fault	Description	Go to step
	Printer does not turn on.	41100
	Printer operator panel bottom left three lights do not go out.	60100
	Printer is up but does not print.	50100
	Light on the printer operator panel remains lit.	43100
	Lights on operator panel do not light.	42100
	Buttons on the printer operator panel do not work.	46100

Table 3.1 Fault (error) codes and corresponding DTRs (Continued)

Fault	Description	Go to step
	Ink is leaking from the printhead during POC.	20700
	Printer is up but print quality is poor.	99300
1001	Memory allocation failure	80100
1002	Incorrect password entered failure	81100
1507	Unrecognized error status	82100
3102	Job setup retrieve from file *xx* failed	83100
3202	Job setup write to file *xx* failed	84100
6204	Printer *xx* communications port *yy* not installed	85100
6902	System configuration save failed	84100
7001	Memory allocation failure	80100
7004	System event file access failure; event monitoring disabled	84200
8001	Memory allocation failure	80100
8010	Printer *xx* port *yy* not installed	86100
8011	Printer port fault: overrun Printer port fault: overflow Printer port fault: all others	63100 63200 61100
8012	Printer port timeout	61100
8020	Printer *xx* command echo invalid	64100
8021	Printer *xx* does not recognize command	64100
8030	Memory allocation failure	80100
8030	Printer *xx* response invalid	64100
8050	Printer data system command to fluid system pending	87100
8050	Printer fluid system communication failure	44100
8051	Printer *xx* fluid system command rejected	87100
8054	Printer *xx* fluid system response invalid	44100
8055	Printer fluid system command timeout	44100
8056	Printer fluid system command still pending	87100
8071	Input device operation failure	88100
8083	Input file positioning error	88100
8084	Input file close error	88100
8201	Internal memory allocation failure	80100
8301	Internal memory allocation failure	80100
9001	Internal memory allocation failure	80100
9006	Printer unavailable; port(s) not installed	85100
9023	Error signaled by field layout option *option*	88500
9201	Printer command/status port *xx* not installed	86100
9202	Printer command/status fault: *fault*	64100

Table 3.1 Fault (error) codes and corresponding DTRs (Continued)

Fault	Description	Go to step
9203	Printer not accepting commands or sending status	61100
9204	Printer command response invalid	64100
9205	Printer status response invalid	64100
9206	Memory allocation failure	80100
9911	Memory allocation failure	80100
9931	Memory allocation failure	80100
10001	Printer *xx* error *code*	44100
11002	Printer error DS-02: no default font	65100
11007	Printer error DS-07: MC version mismatch	66100
11018	Printer error DS-12: data system supervisor timeout	64100
11039	Printer error DS-27: offline timeout	64100
11040	Printer error DS-28: purge data timeout	67100
11041	Printer error DS-29: output offline timeout	68100
11064	Printer error DS-40: serial interface overrun	44100
11065	Printer error DS-41: serial interface parity error	44100
11066	Printer error DS-42: serial interface framing error	44100
11067	Printer error DS-43: serial interface buffer error	44100
11096	Printer error DS-60: insufficient memory for font load	65100
11098	Printer error DS-62: font load failed, format error	65100
11099	Printer error DS-63: catalog load failed, size error	64100
11100	Printer error DS-64: insufficient memory for catalog load	64100
11101	Printer error DS-65: invalid character in parameter	64100
11102	Printer error DS-66: font parameter out of range	64100
11103	Printer error DS-67: invalid font orientation or resolution	64100
11104	Printer error DS-68: font bit map larger than specified size	64100
11105	Printer error DS-69: required font parameters not specified	64100
11106	Printer error DS-6B: font download aborted	64100
11109	Printer error DS-6D: font access table error	64100
11110	Printer error DS-6E: invalid font parameter	64100
11111	Printer error DS-6F: no characters in font	64100
11112	Printer error DS-70: requested font not found	65100
11113	Printer error DS-71: active font removed	64100
11114	Printer error DS-72: font access error	64100
11115	Printer error DS-73: font not available	65100
11128	Printer error DS-80: K4K command sequence error	68100

Table 3.1 Fault (error) codes and corresponding DTRs (Continued)

Fault	Description	Go to step
11130	Printer error DS-82: K4K link establishment error	69100
11131	Printer error DS-83: K4K buffer release error	70100
11132	Printer error DS-84: K4K buffer request error	69100
11133	Printer error DS-85: K4K buffer release/request error	70100
11134	Printer error DS-86: K4K offline error	71100
11135	Printer error DS-87: K4K diagnostic test error	71100
11136	Printer error DS-88: K4K restart error	69100
11145	Printer error DS-91: K4K power up diagnostic timeout	69100
11146	Printer error DS-92: K4K link establishment timeout	69100
11147	Printer error DS-93: K4K buffer release timeout	70100
11148	Printer error DS-94: K4K buffer request timeout	71100
11149	Printer error DS-95: K4K buffer release/request timeout	71100
11150	Printer error DS-96: K4K offline timeout	71100
11151	Printer error DS-97: K4K restart timeout	71100
11152	Printer error DS-98: K4K unexpected header received	68100
11153	Printer error DS-99: K4K required header missing	68100
11158	Printer error DS-9E: K4K purge buffer timeout	70100
11161	Printer error DS-A1: K4K header error; invalid images per piece	68100
11162	Printer error DS-A2: K4K header error; invalid lines per piece	68100
11163	Printer error DS-A3: K4K header error; invalid image width	68100
11164	Printer error DS-A4: K4K header error; invalid position	68100
11165	Printer error DS-A5: K4K header error; invalid orientation	68100
11166	Printer error DS-A6: K4K header error; invalid sort activate	68100
11167	Printer error DS-A7: K4K header error; invalid output mode	68100
11168	Printer error DS-A8: K4K header error; invalid sort line	68100
11169	Printer error DS-A9: K4K header error; invalid sort column	68100
11170	Printer error DS-AA: K4K header error; invalid duration *A*	68100
11171	Printer error DS-AB: K4K header error; invalid duration *B*	68100
11172	Printer error DS-AC: K4K header error; invalid duration *C*	68100
11173	Printer error DS-AD: K4K header error; invalid duration *D*	68100

Table 3.1 Fault (error) codes and corresponding DTRs (Continued)

Fault	Description	Go to step
11174	Printer error DS-AE: K4K header error; invalid duration *E*	68100
11175	Printer error DS-AF: K4K header error; invalid delay *A*	68100
11176	Printer error DS-B0: K4K header error; invalid delay *B*	68100
11177	Printer error DS-B1: K4K header error; invalid delay *C*	68100
11178	Printer error DS-B2: K4K header error; invalid delay *D*	68100
11179	Printer error DS-B3: K4K header error; invalid delay *E*	68100
11192	Printer error DS-C0: invalid left margin value set	64100
11193	Printer error DS-C1: invalid right margin value set	64100
11194	Printer error DS-C2: tach rate incompatible with resolution	64100
11195	Printer error DS-C3: tach rate incompatible with resolution	64100
13020	Printer error IJ-14: float switch failure	16100
13022	Printer error IJ-16: positive air pump not working	29100
13023	Printer error IJ-17: catcher heater driver failed	01100
13024	Printer error IJ-18: ink pump voltage high	20400
13025	Printer error IJ-19: ink pump voltage low	20500
13041	Printer error IJ-29: interrupt enable port failed POC	35100
13048	Printer error IJ-30: AC relays failed POC	09100
13049	Printer error IJ-31: solenoids and catcher heater outputs failed POC	10100
13050	Printer error IJ-32: print control failed POC	25100
13051	Printer error IJ-33: tach and cue failed POC	39100
13052	Printer error IJ-34: solenoid motion failed POC	11100
13053	Printer error IJ-35: ink pump/transducer failed POC	20100
13054	Printer error IJ-36: positive air pump/sensors failed POC	01100
13055	Printer error IJ-37: vacuum failed POC	02100
13056	Printer error IJ-38: umbilical failed POC	26100
13057	Printer error IJ-39: power supplies failed POC	19100
13058	Printer error IJ-3A: purge fill motion failed	11100
13059	Printer error IJ-3B: gap motion failed	11100
13060	Printer error IJ-3C: purge input motion failed	11100
13061	Printer error IJ-3D: catcher motion failed	11100
13062	Printer error IJ-3E: purge output motion failed	11100
13063	Printer error IJ-3F: eyelid motion failed	11100
13065	Printer error IJ-41: vacuum system not working	02100
13066	Printer error IJ-42: print jet short	03100

Table 3.1 Fault (error) codes and corresponding DTRs (Continued)

Fault	Description	Go to step
13067	Printer error IJ-43: stimulation under amplitude	04100
13068	Printer error IJ-44: stimulation over amplitude	04100
13069	Printer error IJ-45: power failure detected by MC	19100
13070	Printer error IJ-46: vacuum system restricted	02900
13071	Printer error IJ-47: ink spill in cabinet	06100
13073	Printer error IJ-49: maximum state time exceeded in table	37100
13077	Printer error IJ-4D: catcher heater open	01100
13078	Printer error IJ-4E: ink heater control failed	01100
13079	Printer error IJ-4F: ink pressure high	27100
13080	Printer error IJ-50: ink pressure low	28100
13081	Printer error IJ-51: printhead ink temperature high	12100
13082	Printer error IJ-52: printhead ink temperature low	13100
13083	Printer error IJ-53: ink tank temperature high	14100
13084	Printer error IJ-54: ink tank temperature low	15100
13085	Printer error IJ-55: anti-siphon valve failure	11100
13086	Printer error IJ-56: crossflush valve motion not detected	11100
13087	Printer error IJ-57: ink jet power supply failure	05100
13088	Printer error IJ-58: ink pump current high	20400
13089	Printer error IJ-59: ink pump current low	20500
13092	Printer error IJ-5C: ink fill valve motion not detected	11100
13094	Printer error IJ-5E: ink bottle empty	17100
13097	Printer error IJ-61: printhead control failed	04100
13099	Printer error IJ-63: ink will not warm up	22100
13100	Printer error IJ-64: eyelid control failed	11100
13112	Printer error IJ-70: replenish fluid low	18100
13113	Printer error IJ-71: replenish solenoid motion failed	11100
13114	Printer error IJ-72: brown out detected	19100
13116	Printer error IJ-74: battery backed up RAM failed	24100
13117	Printer error IJ-75: multiple solenoid motion failures	33100
13119	Printer error IJ-77: cue buffer overrun	40100
13120	Printer error IJ-78: vacuum adjust failed	02120
13121	Printer error IJ-79: printhead detect failed	04100
13122	Printer error IJ-7A: Xilynx 3 failed	21100
13123	Printer error IJ-7B: Xilynx program failed	21100
13124	Printer error IJ-7C: printhead connection failed	04100
13125	Printer error IJ-7D: catcher temperature too high	25140
13126	Printer error IJ-7E: latch up error	25800

Table 3.1 Fault (error) codes and corresponding DTRs (Continued)

Fault	Description	Go to step
13127	Printer error IJ-7F: ink jet command timeout	44100
13153	Printer error IJ-99: A to D converter check failed	34100
14001	Printer error MC-01: software version mismatch	51100
14003	Printer error MC-03: cue buffer overrun	52100
14005	Printer error MC-05: cue overrun	53100
14008	Printer error MC-08: piece overrun	54100
15208	Printer error DS2-D0: clear data failed	64100
16225	Printer error IJ2E-E1: invalid fluid system response	44100
16226	Printer error IJ2E-E2: internal communications error	44100
16227	Printer error IJ2E-E3: internal communications error	44100
16228	Printer error IJ2E-E4: internal communications error	44100
16229	Printer error IJ2E-E5: fluid system communications error	44100
16230	Printer error IJ2E-E6: fluid system communications error	44100
16231	Printer error IJ2E-E7: fluid system response timeout	44100
16232	Printer error IJ6E8: fluid system command sequence error	44100
18129	Printer error FN2-81: alphabetic character in font ID	72100
18130	Printer error FN2-82: font ID number out of range	72100
18131	Printer error FN2-83: insufficient space in font access table	64100
18132	Printer error FN2-84: invalid font version in flash card	72100
18142	Printer error FN2-8E: insufficient memory for flash card font	73100

DTR Procedures

Table 3.2 identifies the DTR procedure corresponding to the number in the “Go To Step” column of Table 3.1. Take the action described in the “Procedure” column of Table 3.2, and then proceed according to the outcome of that procedure by selecting another step from the “Yes” or “No” columns.

Table 3.2 DTR procedures

Step	Procedure	Yes	No
01100	Select **Fluid Tests** → **AC relays**. Does test pass?	01150	09100
01150	Select **Fluid Tests** → **Positive air pump / sensors**. Multiplexor failure high: Purge float switch: Positive air detected: Positive air not detected: Tank temperature sensor: Printhead temperature sensor: Spill sensor(s): Multiplexor failure low: Catcher heater driver on: Catcher heater open: Catcher heater driver off: Catcher volts to High	 01900 01900 01200 01400 01500 01500 06100 01900 07100 08100 01800 01600	
01200	Is air pump running?	01210	01220
01210	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
01220	Unplug pressure switch. Select **Fluid Tests** → **Positive air pump / sensors**. Does Positive Air Detected: fail?	01300	01240
01240	Replace *positive air switch* and rerun test. Does problem still exist?	99500	99600
01300	Turn printer off; unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Positive air pump / sensors**. Does Positive Air Detected: fail?	01310	01320
01310	Connect pressure switch; replace *IJC board* and rerun test. Does problem still exist?	99500	99600
01320	Connect pressure switch; replace *fluid system DC cable* (pin 24 & 25 shorted on J9) and rerun test. Does problem still exist?	99500	99600
01400	Examine NE5 light on ACHV supply board. Is it on?	01410	19100
01410	Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Printhead to State #**. Is air pump running?	01700	01430

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
01430	Examine D43 on ACHV supply board. Is it on?	01440	01490
01440	Examine NE2 on ACHV supply board. Is it on?	01450	01490
01450	Unplug air pump; measure pins 1 and 2 on fluid system AC cable. Does voltage measure between 108 and 127 volts AC?	01470	01460
01460	Unplug J5 on ACHV supply board; measure pins 3 and 6 of J5 on the ACHV supply board. Does voltage measure between 108 and 127 volts AC?	01480	19100
01470	Replace *air pump*. Does problem still exist?	99500	99600
01480	Replace fluid system AC cable; plug in air pump connector and rerun test. Does problem still exist?	99500	99600
01490	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
01500	Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead down**. Does error 13081: IJ-51: printhead temp high occur? Does error 13082: IJ-52: printhead temp low occur? Does error 13083: IJ-53: Ink tank temp high occur? Does error 13084: IJ-54: Ink tank temp low occur?	 12100 13100 14100 15100	
01600 (5120 only)	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
01600 (5240 only)	Examine JP1 and JP3 on ACHV supply board. Are they jumpered?	01640	01620
01620	Jumper JP1 and JP3; verify that JP2 is not jumpered. Does problem still exist?	01640	99600
01640	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place; install lockout switch actuator. Turn printer on with POC by-passed and exit dialog box. Select **Fluid System** → **Printhead standby;** measure voltage across TP2 and TP3. Does voltage measure approximately 24 volts DC?	01660	01670
01660	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
01670	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
01700	Select **Fluid System** → **Printhead down**. Install JP1 in place of *positive air switch* and select **Fluid System** → **Positive air pump / sensors**. Does Positive Air Not Detected: fail?	01720	01730

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
01720	Unscrew tubing nut to which *positive air switch* is attached; install service tube #1 from vacuum transducer's open port (P2) to port on which pressure switch is installed. Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Printhead to state #1**. Select **Fluid Tests** → **Diagnostic status**. Does vacuum level read above 7?	01725	01740
01725	Remove JP1 and service tube #1. Replace *positive air switch* and rerun test. Does problem still exist?	99500	99600
01730	Measure for a short between pin 24 and pin 25 on DC cable-fluid connector J9. Is a short detected?	01750	01770
01740	Select **Fluid System** → **Printhead down**. Unscrew fitting on top of air pump and install service fitting #3 on pump. Install service tube #1 to side of fitting and tube #4 to top of fitting. Select **Fluid System** → **Printhead to state #1**. Select **Fluid System** → **Diagnostic status**. Does vacuum level measure above 7?	01760	01780
01750	Disconnect JP1 and connect pressure switch; replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
01760	Remove JP1, service tube #1, and service fitting #3; replace *positive air filter* and rerun test. Does problem still exist?	99500	99600
01770	Disconnect JP1 and connect pressure switch; replace *IJC board* and rerun test. Does problem still exist?	99500	99600
01780	Remove JP1, tube #1, and service fitting #3; replace *air pump* and rerun test. Does problem still exist?	99500	99600
01800	Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does test pass?	01820	01840
01820	Primary suspect *(ACHV supply board)*; secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
01840	Primary suspect *(IJC board);* secondary suspect *(ACHV supply board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
01900	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
02100	Select **Fluid Tests** → **Power supplies**. Does test pass?	02150	19100

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
02120	Select **Fluid Tests** → **Vacuum**. Does test pass?	02180	02150
02150	Select **Fluid Tests** → **Vacuum**. Stepper phase 0, 1, 2, & 3 driver: Stepper phase 0 driver: Stepper phase 1 driver: Stepper phase 2 driver: Stepper phase 3 driver: Stepper phase 0 winding: Stepper phase 1 winding: Stepper phase 2 winding: Stepper phase 3 winding: Vacuum buffer amplifier: Transducer offset high: Transducer offset low: Vacuum high, valve open: Vacuum low, valve closed: Vacuum high, valve closed: Catcher transducer offset high: Catcher transducer offset low: Catcher vacuum buffer amplifier high: Catcher vacuum buffer amplifier low: No Failures:	 02700 02170 02170 02170 02170 02500 02500 02500 02500 02170 02200 02400 02800 02600 02300 02350 02350 02350 02350 02950	
02170	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Vacuum**. Does previous error occur?	02180	02250
02180	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
02200	Is vacuum pump running?	02260	02220
02220	Unplug vacuum transducer. Select **Fluid Tests** → **Vacuum**. Does Transducer Offset High: fail?	02230	02240
02230	Reconnect vacuum transducer; replace *IJC board* and rerun test. Does problem still exist?	99500	99600
02240	Select **Fluid Tests** → **Power supplies**. Does test pass?	02250	02270
02250	Replace *vacuum transducer assembly* and rerun test. Does problem still exist?	99500	99600
02260	Select **Fluid Tests** → **AC relays**. Does test pass?	02280	09100
02270	Reconnect vacuum transducer; go to step 19100.		
02280	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
02300	Examine catcher line disconnect. Is it connected?	02320	02310

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
02310	Connect catcher line disconnect and select **Fluid Tests** → **Vacuum**. Does test pass?	99600	02320
02320	Disconnect catcher line from catcher and select **Fluid Tests** → **Vacuum**. Does test pass?	02325	02330
02325	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
02330	Reconnect catcher line; inspect catcher line for pinches.		99500
02350	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
02360	Reconnect catcher transducer; replace *IJC board* and rerun test. Does problem still exist?	99500	99600
02370	Select **Fluid Tests** → **Power supplies**. Does test pass?	02380	09100
02380	Replace *catcher transducer assembly* and rerun test. **Note:** The *catcher transducer assembly* is no longer a FRU; contact technical support about replacing this part. Does problem still exist?	99500	99600
02390	Reconnect catcher transducer; go to step 19100.		
02400	Unplug vacuum transducer assembly and J9 on IJC board. Check for continuity on fluid system DC cable at J9 pin 21 to pin 1 on vacuum transducer connector in fluid system. Check for continuity at J9 pin 20 to pin 2 and J9 pin 23 to pin 3. Is continuity detected on all?	02410	02420
02410	Primary suspect *(vacuum transducer assembly);* secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
02420	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
02460	Primary suspect *(catcher transducer assembly)*; secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. **Note:** The *catcher transducer assembly* is no longer a FRU; contact technical support about replacing this part. Does problem still exist?	99500	99600
02470	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
02500	Unplug vacuum regulator assembly and J9 on IJC board. Check for continuity on fluid system DC cable at J9 pin 33 to pin 1 on vacuum regulator connector in fluid system. Check for continuity on the following: J9 pin 32 to pin 2 at the fluid system; J9 pin 29 to pin 3 at fluid system; J9 pin 28 to pin 4 at fluid system; J9 pin 27 to pin 5 at fluid system; and J9 pin 26 to pin 6 at fluid system. Is continuity detected on all?	02510	02520
02510	Replace *vacuum regulator assembly* and rerun test Does problem still exist?	99500	99600
02520	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
02600	Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead to state #1**. Is vacuum pump running?	02610	02630
02610	Select **Fluid System** → **Printhead down**; remove mist filter and select **Fluid Tests** → **Vacuum**. Does Vacuum Low, Valve Closed: fail?	02620	02615
02615	Replace *mist filter* and rerun test. Does problem still exist?	99500	99600
02620	Replace *mist filter.* Plug fitting at ink tank at vacuum regulator assembly connection with service tube #2. Select **Fluid Tests** → **Vacuum**. Does Vacuum Low, Valve Closed: fail?	02690	02625
02625	Remove service tube #2; replace *vacuum regulator assembly* and rerun test. Does problem still exist?	99500	99600
02630	Select **Fluid System** → **Printhead down**. Select **Fluid Tests** → **AC relays**. Does test pass?	02640	09100
02640	Examine NE5 light on ACHV supply board. Is it on?	02645	19100
02645	Select **Fluid System** → **Printhead to state #0**. Does printhead reach state 0?	02650	02647
02647	Correct error.		
02650	Select **Fluid System** → **Printhead to state #1**. Examine LED D28 on ACHV supply board. Is it on?	02660	02685
02660	Examine NE2 light on ACHV supply board. Is it on?	02670	02665
02665	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
02670	Unplug air pump; measure pin 1 and pin 2 on fluid system AC cable. Does voltage measure between 108 and 127 volts AC?	02675	02673

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
02673	Unplug J5 on ACHV supply board; measure pin 2 and 5 of J5 on ACHV supply board. Does voltage measure between 108 and 127 volts AC?	02680	19100
02675	Replace *vacuum pump assembly* and rerun test. Does problem still exist?	99500	99600
02680	Replace *fluid system AC cable* and rerun test. Does problem still exist?	99500	99600
02685	Select **Fluid System** → **Printhead down**. Primary suspect *(ACHV supply board)*; secondary suspect *(ACHV to IJC cable)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
02690	Examine vacuum transducer. Is it plugged into port P1?	02695	02692
02692	Plug vacuum transducer into P1. Does problem still exist?	02695	99600
02695	Remove service tube #2. Primary suspect *(vacuum pump assembly)*; secondary suspect *(vacuum line loose or cut)* or *(vacuum transducer assembly)*. Replace each component and rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
02700	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Vacuum**. Does Stepper Phase 0, 1, 2, and 3 Driver: fail?	02710	02760
02710	Unplug vacuum regulator assembly. Check for shorts between pin 1 to pin 3, 4, 5, and 6 and pin 2 to pin 3, 4, 5, and 6 at connector on fluid system. Are any shorts detected?	02740	02730
02730	Replace *IJC board* and *vacuum regulator assembly* and rerun test. Does problem still exist?	99500	99600
02740	Replace *IJC board* and *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
02760	Connect J9 on IJC board. Primary suspect *(vacuum regulator assembly)*; secondary suspect *(fluid system cable*). Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
02800	Unscrew filter on vacuum regulator assembly and select **Fluid Tests** → **Vacuum**. Does Vacuum High, Valve Open: fail?	02820	02840
02820	Replace *vacuum regulator assembly* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
02840	Replace *vacuum regulator filter* and rerun test. Does problem still exist?	99500	99600
02900	Select **Fluid Tests** → **Vacuum**. Does test pass?	02910	02100
02910	Unscrew filter on vacuum regulator assembly. Select **Fluid System** → **Printhead standby**. Does error code IJ-46 occur?	02920	02940
02920	Replace *vacuum regulator assembly* and rerun test. Does problem still exist?	99500	99600
02940	Replace *vacuum regulator filter* and rerun test. Does problem still exist?	99500	99600
02950	Primary suspect *(mist filter)*; secondary suspect *(vacuum pump assembly)*.	99500	99600
03100	Select **Fluid Tests** → **AC relays**. Does test pass?	03120	09100
03120	Select **Fluid Tests** → **Print control**. Does test pass?	03200	25100
03200 (5120 only)	Disconnect printhead flex cable board and install service test board #1 in its place; connect J1 to J1 and J2 to J2. Install lockout switch actuator. Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Setup;** and set volts to 180. Select **Fluid System** → **Printhead standby**. Does error code IJ-42 occur?	03500	03210
03200 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place. Install lockout switch actuator. Turn printer on with POC by-passed and exit dialog box. Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Setup;** and set volts to 180. Select **Fluid System** → **Printhead standby**. Does error code IJ-42 occur?	03215	03210
03210	Measure DC voltage between TP4 and TP5 on ACHV supply board. Does voltage measure 180 +/-3?	03260	03215
03215	Turn printer off. Remove test board #1 and reconnect flex cable. Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
03260 (5120 only)	Select **Fluid System** → **Printhead down**. Reconnect flex cable board; select **Fluid System** → **Setup;** set volts to 115. Select **Fluid System** → **Printhead clean**. Does error code IJ-42 occur?	03300	03280
03260 (5240 only)	Select **Fluid System** → **Printhead down**. Turn printer off. Reconnect charge DR to PH cable at printhead. Turn printer on with POC by-passed. Select **Fluid System** → **Setup**; set volts to 100. Select **Fluid System** → **Printhead clean**. Does error code IJ-42 occur?	03300	03280

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
03280	Set voltage to produce good quality print and to eliminate occurrence of error code IJ-42. Does problem still exist?	03300	99600
03300	Select **Fluid System** → **Printhead clean**. Does error code IJ-42 occur?	03700	03320
03320	Set voltage to produce good quality print and to eliminate the occurrence of error code IJ-42. Does problem still exist?	03700	99600
03500	Replace printhead *charge driver board* and rerun test. Does problem still exist?	99500	99600
03700	Thoroughly examine print array slot, printhead cover, eyelid seal, and surrounding area for fibers and ink that could disturb one or more jets. Remove any fibers or ink. If fibers or ink are detected, perform the following procedure: Select **Fluid System** → **Printhead to state #8** (low crossflush) for 2 minutes. Select **Fluid System** → **Printhead to state #9** (super stim) for 2 minutes. Select **Fluid System** → **Printhead to state #8** (low crossflush) for 2 minutes. Select **Fluid System** → **Printhead to state #9** (super stim) for 2 minutes. Select **Fluid System** → **Printhead to state #8** (low crossflush) for 2 minutes. Select **Fluid System** → **Printhead to state #9** (super stim) for 2 minutes. Select **Fluid System** → **Printhead to state #10** (high crossflush) for 2 minutes. Select **Fluid System** → **Printhead down**. Select **Fluid System** → **Printhead clean**. Does error code IJ-42 occur?	99400	03705
03705	Select **Fluid System** → **Status**. Are any errors generated?	03710	03720
03710	Is error code IJ-42 generated?	99400	03800
03720	Set voltage to produce good quality print and to eliminate the occurrence of IJ-42 errors. Does problem still exist?	99400	99600
03800	Correct error.		
04100 (5120 only)	Examine DS2 LED on tab buffer (120) board. Is it on?	04120	04600
04100 (5240 only)	Examine D20 LED on charge driver interface 240. Is it on?	04120	04600
04120 (5120 only)	Examine IJC board to verify that JP2, JP4, JP9, and JP13 are jumpered and JP3, JP8, and JP15 are not jumpered. Are jumper settings correct?	04200	04140

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
04120 (5240 only)	Examine IJC board to verify that JP3, JP4, JP8, and JP15 are jumpered and JP2, JP9, and JP13 are not jumpered. Are jumper settings correct?	04200	04140
04140	Correct jumper settings. Does problem still exist?	04200	99600
04200 (5120 only)	Inspect connector J5 and J4 on tab buffer (120) board and J6 and J7 on IJC board for proper connections. Verify that printhead timer board is plugged in. Are all connections correct?	04300	04250
04200 (5240 only)	Inspect connectors J2, J5 and J4 on charge driver interface 240 and J6 and J7 on IJC board for proper connections. Are all connections correct?	04260	04250
04250	Correct connections as required and select **Fluid Tests** → **Umbilical**. Does test pass?	99600	04300
04260	Turn printer off and back on with POC by-passed. Select **Fluid Tests** → **Umbilical**. Does test pass?	99600	04300
04300	Install service test board #2 at J6 and J7 using supplied B&C cable and stim test cable on IJC board. Set DIP switches SW1 on test board #2 to position 1. Select **Fluid Tests** → **Umbilical**. Does test pass?	04400	04350
04350	Select **Fluid Tests** → **Power supplies**. Does test pass?	04370	04380
04370	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
04380	Disconnect test board #2 and reconnect J6 and J7 on IJC board. Go to step 19100.		
04400 (5120 only)	Reinstall J6 and J7 on IJC board and unplug J5 and J4 on tab buffer (120) board; install J5 and J4 to service test board #2 with DIP switches on service test board #2 in position 1. Select **Fluid Tests** → **Umbilical**. Does test pass?	04500	04420
04400 (5240 only)	Reinstall J6 and J7 on IJC board and unplug J5 and J4 on charge driver interface 240; install J5 and J4 on service test board #2 with DIP switches SW1 on service test board #2 in position 1. Select **Fluid Tests** → **Umbilical**. Does test pass?	04500	04420
04420	Reconnect printhead flex cable board. Replace *umbilical assembly* and rerun test. Does problem still exist?	99500	99600
04500 (5120 only)	Plug in timer board on printhead to service test board #2 and set switches to position 2. Select **Fluid Tests** → **Umbilical**. Does test pass?	04520	04540

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
04500 (5240 only)	Plug in NV Ram board on printhead to service test board #2 and set switches SW1 to position 2. Select **Fluid Tests** → **Umbilical**. Does test pass?	04520	04540
04520 (5120 only)	Replace *tab buffer board* and rerun test. Does problem still exist?	99500	99600
04520 (5240 only)	Replace *charge driver interface 240* and rerun test. Does problem still exist?	99500	99600
04540	Reconnect J5 and J4 on tab buffer board. Primary suspect *(printhead assembly);* secondary suspect *(IJC board).* Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
04600 (5120 only)	Unplug J5 on tab buffer board and connect it to service test board #2. Examine DS2 on test board #2. Is it on?	04610	04620
04600 (5240 only)	Unplug J3 on charge driver interface 240 and connect it to service test board #2. Examine D2 on test board #2. Is it on?	04610	04620
04610 (5120 only)	Replace *tab buffer board* and rerun test. Does problem still exist?	99500	99600
04610 (5240 only)	Replace *charge driver interface 240 board* and rerun test. Does problem still exist?	99500	99600
04620	Select **Fluid Tests** → **Power supplies**. Does test pass?	04640	04630
04630 (5120 only)	Reconnect J5 on charge driver 120 board. Go to step 19100.		
04630 (5240 only)	Reconnect J3 on charge driver interface 240. Go to step 19100.		
04640	Plug service test board #2 into J6 on IJC board using stim test cable. Examine DS2 on test board #2. Is it on?	04660	04680
04660	Replace *umbilical assembly* and rerun test. Does problem still exist?	99500	99600
04680	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
05100	Select **Fluid Tests** → **Print control**. Does test pass?	05120	25100
05120	Select **Fluid Tests** → **Umbilical**.		
	Does test pass?	05200	26100

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
05200	Examine DS18 on ACHV supply board while selecting **Fluid Tests** → **Print control**. Does it flash?	05300	05220
05220	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
05300 (5120 only)	Disconnect printhead flex cable board and install service test board #1 in its place; connect J1 to J1 and J2 to J2. Select **Fluid System** → **Printhead standby**. Does test pass without error IJ-57 occurring?	05350	05400
05300 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place. Install lockout switch actuator. Turn printer on with POC by-passed and exit dialog box. Select **Fluid System** → **Printhead standby**. Does test pass without error IJ-57 occurring?	05350	05400
05350	Replace *printhead asse*mbly and rerun test. Does problem still exist?	99500	99600
05400	Primary suspect *(ACHV supply board);* secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
06100	Locate any spills and repair. Clean spill sensor and select **Fluid Tests** → **Positive air pump / sensors**. Does Spill Sensor(s): fail?	06200	99600
06200	Unplug spill sensor and Select **Fluid Tests** → **Positive air pump / sensors**. Does Spill Sensor(s): fail?	06400	06300
06300	Clean spill sensors causing error and select **Fluid Tests** → **Positive air pump / sensors**. Does Spill Sensor: fail?	06320	99600
06320	Replace *spill sensor assembly* and rerun test. Does problem still exist?	99500	99600
06400	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Positive air pump / sensors**. Does Spill Sensor: fail?	06420	06520
06420	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
06520	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
07100 (5120 only)	Disconnect printhead flex cable board and install service test board #1 in its place. Connect J1 to J1 and J2 to J2. Select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Driver On: fail?	07200	07140

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
07100 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place. Install lockout switch actuator. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests → Positive air pump / sensors**. Does Catcher Heater Driver On: fail?	07200	07140
07140 (5120 only)	Reconnect printhead flex cable board and select **Fluid Tests → Positive air pump / sensors**. Does Catcher Heater Driver: fail?	07150	99600
07140 (5240 only)	Reconnect charge DR to PH cable at printhead and select **Fluid Tests → Positive air pump / sensors**. Does Catcher Heater Driver: fail?	07150	99600
07150	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
07200	Select **Fluid Tests → Solenoid and catcher heater outputs**. Does test pass?	07300	07250
07250 (5120 only)	Reconnect printhead flex cable board. Go to step 10100.		
07250 (5240 only)	Turn printer off. Reconnect charge DR to PH cable at printhead. Turn printer on with POC by-passed and exit dialog box. Go to step 10100.		
07300	Select **Fluid Tests → AC relays**. Does text pass?	07600	07350
07350 (5120 only)	Reconnect printhead flex cable board. Go to step 09100.		
07350 (5240 only)	Turn printer off. Reconnect charge DR to PH cable at printhead. Turn printer on with POC by-passed and exit dialog box. Go to step 09100.		
07600	Disconnect J4 on ACHV supply board. Select **Fluid Tests → Positive air pump / sensors**. Does Catcher Heater Driver On: fail?	07620	07700
07620 (5120 only)	Turn printer off. Reconnect printhead flex cable board. Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
07620 (5240 only)	Turn printer off. Reconnect charge DR to PH cable at printhead. Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
07700 (5120 only)	Reconnect J4 on ACHV board. Primary suspect *(umbilical assembly);* secondary suspect *(charge driver 120 board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
07700 (5240 only)	Turn printer off. Reconnect J4 on ACHV board. Disconnect J3 on charge driver interface 240 and connect it to service test board #2. Disconnect charge DR to PH cable at printhead and install it at J9 to service test board #2. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Driver On: fail?	07710	07740
07710	Disconnect charge DR to PH cable and install it at J11 and J10 to service test board #2. Does LED D3 light?	07730	07720
07720	Turn printer off. Reconnect charge DR to PH cable at printhead and J3 on charge driver interface 240. Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
07730	Turn printer off. Replace *charge DR to PH cable* and rerun test. Does problem still exist?	99500	99600
07740	Turn printer off. Replace *charge driver interface 240 cable* and rerun test. Does problem still exist?	99500	99600
08100 (5120 only)	Disconnect printhead flex cable board and install service test board #1 in its place; connect J1 to J1 and J2 to J2. Select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Open: fail?	08200	08150
08100 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Open: fail?	08200	08150
08150 (5120 only)	Reinstall printhead flex cable board and select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Open: fail?	08170	99600
08150 (5240 only)	Turn printer off. Reconnect charge DR to PH cable at printhead. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Open: fail?	08170	99600
08170	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
08200	Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does test pass?	08300	10100
08300	Select **Fluid Tests** → **AC relays**. Does test pass?	08400	09100
08400 (5120 only)	Examine DS1 on charge driver 120 board. Is it on?	08450	08420

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
08400 (5240 only)	Examine D20 LED on charge driver interface 240. Is it on?	08450	08420
08420	Select **Fluid Tests** → **Power supplies**. Does test pass?	08430	19100
08430	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
08450 (5120 only)	Primary suspect *(ACHV supply board);* secondary suspect *(umbilical assembly), (IJC board), or (charge driver 120 board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
08450 (5240 only)	Install J3 on charge driver interface 240 on service test board #2. Disconnect charge DR to PH cable at printhead and install it at J9 to service test board #2. Select **Fluid Tests** → **Positive air pump / sensors**. Does Catcher Heater Open: fail?	08500	08470
08470	Replace *charge driver interface 240* and rerun test. Does problem still exist?	99500	99600
08500	While selecting **Fluid Tests** → **Positive air pump / sensors**, examine D3 on ACHV supply board. Does it flash?	08520	08600
08520	Reconnect J3 on charge driver interface 240. Primary suspect *(ACHV supply board)*; secondary suspect *(umbilical)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
08600	Reconnect J3 on charge driver interface 240. Primary suspect *(ACHV supply board);* secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
09100	Select **Fluid Tests** → **AC relays**.		
	ACHV board attached:	09300	
	Vacuum pump, turn off:	09200	
	Vacuum pump, turn on:	09200	
	Ink heater, turn off:	09200	
	Ink heater, turn on:	09200	
	Heater current, not sensed:	09200	
	Ink heater current after test:	09200	
	Heater current sensed:	09500	
	Ink heater current during test:	09200	
	Spare, turn off:	09230	
	Sort A, turn on:	09200	
	Spare, turn on:	09200	
	Base stop, turn off:	09200	
	Base stop, turn on:	09200	

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
09200	Turn printer off. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Select **Fluid Tests** → **AC relays**. Does previous error occur?	09210	09220
09210	Reconnect ACHV to IJC cable. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
09220	Primary suspect *(ACHV supply board)*; secondary suspect *(ACHV to IJC cable)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
09300	Examine ACHV to IJC cable. Is it plugged in?	09320	09325
09320	Primary suspect *(IJC board);* secondary suspect *(ACHV to IJC cable)* or *(ACHV supply board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
09325	Reconnect ACHV to IJC cable and rerun test. Does problem still exist?	99320	99600
09400	Examine NE4 on ACHV supply board while selecting **Fluid Tests** → **AC relays**. Does it flash?	09470	09420
09420	Examine D31 on ACHV supply board while selecting **Fluid Tests** → **AC relays**. Does it flash?	09460	09440
09440	Primary suspect *(IJC board);* secondary suspect *(ACHV supply board)* or (*ACHV to IJC cable)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
09460	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
09470	Unplug ink heater; measure continuity between pin 3 and pin 1. Is continuity detected?	09475	09480
09475	Unplug J5 on ACHV supply board; measure continuity between J8 pin 1 to pin 1 at ink heater and J8 pin 4 to pin 3 at ink heater. Is continuity detected on both?	09490	09495
09480	Replace *fluid supply assembly* and rerun test. Does problem still exist?	99500	99600
09490	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
09495	Replace *fluid system AC cable* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
09500	Disconnect ink heater and air pump. Install jumper JP7 between ink heater and air pump. Select **Fluid Tests** → **AC relays**. Does Ink Heater Current During Test: fail?	09520	09510
09510	Replace *fluid supply assembly* and rerun test. Does problem still exist?	99500	99600
09520	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
10100	Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Catcher heater, turn off: and all others pass: Catcher heater, turn on: and all others pass: Gap inject valve, turn off: Gap inject valve, turn on: Catcher valve, turn off: Catcher valve, turn on: Purge fill valve, turn off: Purge fill valve, turn on: Purge input valve, turn off: Purge input valve, turn on: Purge output valve, turn off: Purge output valve, turn on: Purge input valve, turn off: Purge input valve, turn on: Eyelid high driver, turn off: Eyelid high driver, turn on: Eyelid low driver, turn off: Eyelid low driver, turn on: Antisiphon valve, turn off: Antisiphon valve, turn on: Crossflush valve, turn off: Crossflush valve, turn on: Ink fill valve, turn off: Ink fill valve, turn on: Replenish valve, turn off: Replenish valve, turn on:	 10200 10250 10600 10600 10600 10600 10600 10600 10600 10600 10600 10600 10600 10600 10300 10300 10300 10300 10400 10400 10450 10450 10500 10500 10550 10550	
10200	Examine D3 on ACHV supply board. Is it on?	10210	10230
10210	Turn printer off. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Is LED D3 on ACHV supply board on?	10220	10230
10220	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
10230	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10250	Turn printer off. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does Catcher Heater, Turn Off: or Catcher Heater, Turn On: fail?	10255	10260

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
10255	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10260	Primary suspect *(ACHV supply board)*; secondary suspect *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
10300	Unplug J1 on IJC board and select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10320	10340
10320	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10340	Reconnect J1 on IJC board and unplug eyelid connector in printhead housing. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10360	10380
10360	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
10380	Reconnect printhead assembly component connector. Replace *eyelid solenoid* and rerun test. Does problem still exist?	99500	99600
10400	Unplug J1 on IJC board. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10410	10420
10410	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10420	Reconnect J1 on IJC board. Unplug printhead assembly component connector in printhead housing. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10430	10440
10430	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
10440	Replace *anti-siphon valve* and rerun test. Does problem still exist?	99500	99600
10450	Unplug J1 on IJC board. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10460	10470
10460	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10470	Reconnect J1 on IJC board. Unplug printhead assembly component connector in printhead housing. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10480	10490
10480	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
10490	Replace *crossflush valve* and rerun test. Does problem still exist?	99500	99600
10500	Turn printer off, unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10510	10520
10510	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10520	Turn printer off. Unplug connector JP6 on IJC board and reinstall J9. Unplug ink fill valve. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10540	10530
10530	Replace *Ink fill valve* and rerun test. Does problem still exist?	99500	99600
10540	Reconnect ink fill valve. Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
10550	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10560	10570
10560	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
10570	Turn printer off, unplug connector JP6 on IJC board and reinstall J9. Unplug replenish valve. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10590	10580
10580	Replace *replenish fill valve* and rerun test. Does problem still exist?	99500	99600
10590	Reconnect ink replenish valve. Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
10600	Is switch #7 up on switch #1?	10620	10610
10610	Move switch #7 down on switch #1 and push SW1. Wait for POC to complete. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	10620	99600
10620	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11100	Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does test pass?	11110	10100

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
11110	Select **Fluid Tests** → **Ink pump / transducer**. Does test pass?	11120	20100
11120	Select **Fluid Tests** → **Power supplies**. Does test pass?	11140	19100
11140	Select **Fluid Tests** → **Solenoid motion**. Eyelid solenoid: fail and Eyelid motion: pass: Anti-siphon solenoid: fail and Anti-siphon valve motion: pass: Crossflush solenoid: fail and Crossflush valve motion: pass Ink fill solenoid: fail and Ink fill solenoid motion: pass Replenish solenoid: fail and Replenish solenoid motion: pass Eyelid driver: Gap inject solenoid: Catcher solenoid: Purge fill solenoid: Purge input solenoid: Purge output solenoid: Gap inject valve motion: Catcher valve motion: Purge fill solenoid motion: Purge input solenoid motion: Purge output valve motion: Eyelid solenoid: Anti-siphon solenoid: Crossflush solenoid: Ink fill solenoid: Replenish solenoid: Eyelid motion: Anti-siphon solenoid motion: Crossflush solenoid motion: Replenish solenoid motion: Ink fill solenoid motion:	11150 11150 11150 11150 11150 11150 11160 11160 11160 11160 11160 11160 11160 11160 11160 11160 11500 11550 11600 11650 11700 11200 11240 11260 11280 11300	
11150	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11160	Is switch #7 up on switch #1?	11180	11170
11170	Move switch #7 down on switch #1 and push SW1. Wait for POC to complete. Select **Fluid Tests** → **Solenoids and catcher heater outputs**. Does same failure occur?	11180	99600
11180	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11200	Move eyelid to verify that it moves freely. For a 5240, check the printhead bottom cover for interference with the eyelid. Select **Fluid Tests** → **Solenoid motion**. Does same failure occur?	11220	99600
11220	Select **Fluid Tests** → **Solenoid motion**. Does eyelid move?	11225	11230
11225	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
11230	Unplug J1 on IJC board and select **Fluid Tests** → **Solenoid motion**. Does Eyelid Solenoid: fail?	11232	11238
11232	Unplug eyelid connector in printhead housing and J1 on IJC board. Check for continuity through eyelid pin 1 and eyelid pin 2. Is continuity detected?	11234	11236
11234	Replace *eyelid solenoid* and rerun test. Does problem still exist?	99500	99600
11236	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
11238	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11240	Disconnect printhead components connector and install service jumper JP2 on both ends; select **Fluid Tests** → **Solenoid motion**. Does Crossflush Valve Motion: fail?	11250	11255
11250	Remove JP2 and replace *anti-siphon valve*; rerun test. Does problem still exist?	99500	99600
11255	Remove JP2 and reconnect printhead components connector. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11260	Disconnect printhead components connector and install service jumper JP2 on both ends; select **Fluid Tests** → **Solenoid motion**. Does Anti-siphon Valve Motion: fail?	11270	11275
11270	Remove JP2 and replace *crossflush valve* and rerun test. Does problem still exist?	99500	99600
11275	Remove JP2 and reconnect printhead components connector. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11280	Push button on bottom of replenish fill valve. Select **Fluid Tests** → **Solenoid motion**. Does Replenish Solenoid Motion: fail?	11285	99600
11285	Unplug replenish valve and plug it into ink valve connector; select **Fluid Tests** → **Solenoid motion**. Does Ink Fill Solenoid Motion: fail?	11290	11295
11290	Reconnect ink valve. Replace *replenish fill valve* and rerun test. Does problem still exist?	99500	99600
11295	Reconnect ink and replenish valves. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11300	Push button on bottom of ink fill valve. Select **Fluid Tests** → **Solenoid motion**. Does Ink Fill Valve Motion: fail?	11305	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
11305	Unplug replenish valve and plug it into ink valve connector and select **Fluid Tests → Solenoid motion**. Does Ink Fill Solenoid Motion: fail?	11310	11315
11310	Reconnect ink and replenish valves. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
11315	Reconnect replenish valve. Replace *ink fill valve* and rerun test. Does problem still exist?	99500	99600
11500	Examine eyelid solenoid. Is it connected?	11510	11505
11505	Connect eyelid solenoid and rerun test. Does problem still exist?	11510	99600
11510	Unplug eyelid connector in printhead housing and J1 on IJC board. Check for continuity through umbilical J1 pin 1 to eyelid pin 1, and J1 pin 2 to eyelid pin 2. Is continuity detected on all?	11515	11520
11515	Replace *eyelid solenoid* and rerun test. Does problem still exist?	99500	99600
11520	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
11550	Examine anti-siphon valve. Is it connected?	11560	11555
11555	Connect anti-siphon valve and rerun test. Does problem still exist?	11560	99600
11560	Unplug PH components connector in printhead housing and J1 on IJC board. Check for continuity through umbilical J1 pin 5 to PH components pin 3, and J1 pin 6 to PH components pin 4. Does continuity exist on all?	11565	11570
11565	Replace *anti-siphon valve* and rerun test. Does problem still exist?	99500	99600
11570	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
11600	Examine crossflush valve. Is it connected?	11610	11605
11605	Connect crossflush valve and rerun test. Does problem still exist?	11610	99600
11610	Unplug PH components connector in printhead housing and J1 on IJC board. Check for continuity through umbilical J1 pin 3 to PH components pin 1, and J1 pin 4 to PH components pin 2. Is continuity detected on all?	11615	11620
11615	Replace *crossflush valve* and rerun test. Does problem still exist?	99500	99600
11620	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
11650	Examine ink fill valve. Is it connected?	11660	11655
11655	Connect ink fill valve and rerun test. Does problem still exist?	11660	99600
11660	Unplug ink fill valve and J9 on IJC board. Check for continuity through fluid system DC cable J9 pin 7 to ink fill valve pin 1, and J9 pin 8 to ink fill valve pin 2. Is continuity detected on all?	11665	11670
11665	Replace *ink fill valve* and rerun test. Does problem still exist?	99500	99600
11670	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
11700	Examine replenish fill valve. Is it connected?	11710	11705
11705	Connect replenish fill valve and rerun test. Does problem still exist?	11710	99600
11710	Unplug replenish fill valve and J9 on IJC board. Check for continuity through fluid system DC cable J9 pin 22 to ink fill valve pin 1, and J9 pin 31 to ink fill valve pin 2. Is continuity detected on all?	11715	11720
11715	Replace *replenish valve* and rerun test. Does problem still exist?	99500	99600
11720	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
12100	Examine NE4 on ACHV supply board. Is it on?	12150	12200
12150	Unplug ink heater. Select **Fluid Tests** → **AC relays**. Does test pass?	12160	09100
12160	Replace *ACHV supply board*. Reconnect ink heater and rerun test. Does problem still exist?	99500	99600
12200	Select **Fluid Tests** → **AC relays**. Does test pass?	12220	09100
12220	Unplug connector printhead component connector in printhead housing. Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Printhead down**. Select **Fluid Tests** → **Diagnostic status**. Is printhead temperature below 50 °F?	12400	12300
12300	Unplug umbilical at J1 on IJC board. Select **Fluid System** → **Status**. Is printhead temperature above 125 °F?	12320	12340
12320	Reconnect printhead component connector. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
12340	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
12400	Select **Fluid System** → **Diagnostic status**. Is ink tank temperature above 125 °F?	12500	12420
12420	Replace *ink/PH* thermistor at printhead and rerun test. Does problem still exist?	99500	99600
12500	Examine AC fans. Are they running?	12600	12650
12600	If ambient temperature is above 104 °F, the fluid may not run.	99600	99500
12650	Disconnect fan plugs and measure AC voltage across pins on connectors. Is voltage between 103 °Vac and 127 °Vac?	12660	12670
12660	Replace *fan* and rerun test. Does problem still exist?	99500	99600
12670	Reconnect fan. Select **Fluid Tests** → **Power supplies**. Does test pass?	12690	19100
12690	Primary suspect *(fluid system AC cable)*; secondary suspect *(ACHV supply board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
13100	Select **Fluid Tests** → **AC relays**. Does test pass?	13130	09100
13130	Select **Fluid Tests** → **Positive air pump / sensors**. Does test pass?	22100	13150
13150	Unplug printhead components connector in printhead housing and install service JP2 to both ends. Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead down**. Select **Fluid Tests** → **Diagnostic status**. Does printhead temperature rise above 125 °F?	13300	13230
13230	Unplug PH components connector in printhead housing and J1 on IJC board. Check for continuity through umbilical J1 pin 7 to PH components pin 5, J1 pin 10 to PH components pin 8, and PH components pin 6 to PH components pin 7. Is continuity detected on all?	13260	13290
13260	Reconnect printhead component connector. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
13290	Reconnect printhead component connector. Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
13300	Select **Fluid System** → **Diagnostic status**. Is ink tank temperature below 50 °F?	13400	13320

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
13320	Remove JP2. Replace *ink/PH thermistor* at printhead and rerun test. Does problem still exist?	99500	99600
13400	Printer does not run if ambient temperature at printhead is below 50 °F.	99600	99500
14100	Examine NE4 on ACHV supply board. Is it on?	14150	14200
14150	Unplug ink heater. Select **Fluid Tests** → **AC relays**. Does test pass?	14160	09100
14160	Replace *ACHV supply board*. Reconnect ink heater and rerun test. Does problem still exist?	99500	99600
14200	Select **Fluid Tests** → **AC relays**. Does test pass?	14220	09100
14220	Unplug ink pump connector at ink pump. Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead down**. Select **Fluid System** → **Diagnostic status**. Is ink tank temperature below 50 °F?	14400	14300
14300	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box, select **Fluid System** → **Printhead down**. Select **Fluid System** → **Diagnostic status**. Is ink tank temperature below 50 °F?	14320	14370
14320	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
14370	Reconnect ink pump connector. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
14400	Connect ink pump connector. Examine AC fans. Are they running?	14500	14550
14500	Select **Fluid System** → **Status**. Is printhead temperature above 125 °F?	14600	14520
14520	Primary suspect *(ink pump assembly)*; secondary suspect *(ink pump does not run when ambient temperature rises above 125 °F)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
14550	Disconnect plug from fan not running and measure AC voltage across pin on fan connector. Does voltage measure between 103 and 127 volts AC?	14570	14580
14570	Select **Fluid Tests** → **Power supplies**. Does test pass?	14590	14580
14580	Reconnect fan plug. Go to step 19100.		

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
14590	Primary suspect *(fluid system AC cable)*; secondary suspect *(ACHV supply board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
14600	Printer does not run if ambient temperature is above 125 °F.	99600	99500
15100	Select **Fluid Tests** → **AC relays**. Does test pass?	15120	09100
15120	Unplug connector ink pump assembly at ink pump and install service JP4. Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Printhead down**. Select **Fluid System** → **Diagnostic status**. Is ink tank temperature above 125 °F?	15300	15150
15150	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid System** → **Diagnostic status**. Is ink tank temperature above 125 °F?	15200	15250
15200	Remove JP4 and JP6 and connect connector ink pump assembly. Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
15250	Remove JP4 and JP6 and connect connector ink pump assembly. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
15300	Select **Fluid System** → **Status**. Is printhead temperature below 50 °F?	15400	15320
15320	Remove JP4. Replace *ink / printhead thermistor* at ink pump assembly and rerun test. Does problem still exist?	99500	99600
15400	Remove JP4 and connect connector ink pump assembly. Is ambient temperature at printhead below 45 °F?	99600	99500
16100	Turn printer off. Unplug float switch and measure for continuity on float switch between pins 1 and 2 and pins 3 and 4. Is continuity detected on both?	16120	16140
16120	Replace *float switch assembly* and rerun test. Does problem still exist?	99500	99600
16140	Disconnect J9 on IJC board and measure for continuity on fluid system DC cable between pins 1 and 2 on float switch connector and pins 3 and 4 on float switch connector. Is continuity detected on either?	16150	16170
16150	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
16170	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
17100	Examine ink bottle. Is ink bottle empty?	17150	17200
17150	Replace ink bottle. Does problem still exist?	99500	99600
17200	Is ink bottle connected?	17300	17250
17250	Connect ink bottle. Does problem still exist?	17300	99600
17300	Select **Fluid System** → **Printhead down**. Select **Fluid Tests** → **Solenoid motion**. Does test pass?	17400	11100
17400	Replace *ink bottle*. Select **Fluid System** → **Printhead to state #3**. Is ink flowing in ink fill line?	17500	17600
17500	Replace *filter restrictor assembly* and rerun test. **Note:** The *filter restrictor assembly* is no longer a FRU; contact technical support about replacing this part. Does problem still exist?	99500	99600
17600	Push button on bottom of ink fill valve and release. Is ink flowing in ink fill line?	99600	17700
17700	Primary suspect (*filter inline*); secondary suspect *(ink fill valve)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
18100	Examine replenish bottle. Is replenish bottle empty?	18150	18200
18150	Replace *replenish bottle*. Does problem still exist?	99500	99600
18200	Is replenish bottle connected?	18300	18250
18250	Connect replenish bottle. Does problem still exist?	99500	99600
18300	Select **Fluid System** → **Printhead Down**. Select **Fluid Tests** → **Solenoid motion.** Does test pass?	18400	11100
18400	Replace *replenish bottle*. Select **Fluid System** → **Printhead To State #3**. Does replenish flow into replenish fill line?	18500	18600
18500	Replace *filter restrictor assembly* and rerun test. Does problem still exist?	99500	99600
18600	Push button on bottom of ink fill valve and release. Does ink flow into ink fill line?	99600	18700

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
18700	Primary suspect *(filter inline);* secondary suspect *(ink fill valve)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
19100	Examine LEDS D28, D29, D30, and D31 on IJC board. Are they lit?	19400	19110
19110	Examine LED DS30 on IJC board. Is it lit?	19130	19120
19120	Measure voltage between TP10 and TP8 on IJC board. Is voltage detected?	19175	19370
19130	Examine LED D29 on IJC board. Is it lit?	19210	19140
19140	Measure DC voltage between TP9 and TP8 on IJC board. Is voltage detected?	19160	19370
19160	Does voltage measure between 11.5-12.5?	19170	19335
19170	Turn printer off. Replace *fuse F3*. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Examine LED D29 on IJC board. Is it lit?	19180	19175
19175	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19180	Reconnect ACHV to IJC cable. Turn printer on with POC by-passed. Examine LED D29 on IJC board. Is it lit?	99600	19190
19190	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
19210	Examine LED D28 on IJC board. Is it lit?	19300	19220
19220	Measure DC voltage between TP7 and TP8 on IJC board. Is voltage detected?	19240	19370
19240	Does voltage measure between 5.0-5.25?	19250	19335
19250	Turn printer off. Replace *fuse F2*. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Examine LED D28 on IJC board. Is it lit?	19260	19255
19255	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19260	Reconnect ACHV to IJC cable. Turn printer on with POC by-passed. Examine LED D28 on the IJC board. Is it lit?	99600	19265
19265	Replace *ACHV supply board* and *fuse 2*; rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
19300	Measure DC voltage between TP6 and TP8 on IJC board. Is voltage detected?	19330	19370
19330	Does voltage measure between 23.0-26.0?	19340	19335
19335	Replace *low voltage power supply* and rerun test.		
	Does problem still exist?	99500	99600
19340	Turn printer off. Replace *fuse F1*. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Select **Fluid Tests Power supplies**. Does +24 Volt Supply: pass?	19350	19345
19345	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19350	Reconnect ACHV to IJC cable. Turn printer on with POC by-passed. Select **Fluid Tests** → **Power supplies**. Does +24 Volt Supply: pass?	99600	19360
19360	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
19370	Examine J8 on IJC board. Is it plugged in?	19380	19375
19375	Plug in J8. Does problem still exist?	19380	99600
19380	Measure AC voltage on ACHV supply board J8 pins 1 and 3. Does voltage measure between 100-130 AC volts?	19385	19390
19385	Replace *low voltage power supply* and rerun test. Does problem still exist?	99500	99600
19390	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
19400	Select **Fluid Tests** → **Power supplies**. Does test pass?	99500	19405
19405	Turn printer off. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Select **Fluid Tests** → **Power supplies**. Does test pass?	19390	19410

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
19410	Turn printer off. Reconnect ACHV to IJC cable. Turn printer on with POC by-passed. Select **Fluid Tests** → **Power supplies**. +5 volt supply: +12 volt supply: +24 volt supply: -12 volt supply: Line volt supply: "Enhance" volt supply: Pressure transducer supply: Vacuum transducer supply: 2.5 volt supply: Printhead hour meter level:	 19420 19460 19440 19700 19415 19415 19415 19415 19415 19500	
19415	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19420	Measure DC voltage between TP7 and TP8 on IJC board. Does voltage measure between 5.00 and 5.25?	19430	19435
19430	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19435	Replace *low voltage power supply* and rerun test. Does problem still exist?	99500	99600
19440	Measure DC voltage between TP6 and TP8 on IJC board. Does voltage measure between 23.0 and 26.0?	19445	19455
19445	Measure voltage between TP8 and bottom of fuse F1. Does voltage measure between 23.0 and 26.0?	19450	19340
19450	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19455	Replace *low voltage power supply* and rerun test. Does problem still exist?	99500	99600
19460	Measure DC voltage between TP9 and TP8 on IJC board. Does voltage measure between 11.5 and 12.5?	19470	19480
19470	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19480	Replace *low voltage power supply* and rerun test. Does problem still exist?	99500	99600
19500 (5120 only)	Disconnect J6 on IJC board and select **Fluid Tests** → **Power supplies**. Does test pass?	19520	19510
19500 (5240 only)	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19510	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
19520	Reconnect J6 on IJC board and disconnect resonator board on printhead. Select **Fluid Tests** → **Power supplies**. Does test pass?	19530	19540
19530	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
19540	Disconnect J5 on charge driver 120 board and select **Fluid Tests** → **Power supplies**. Does test pass?	19550	19560
19550	Replace *charge driver 120 board* and rerun test. Does problem still exist?	99500	99600
19560	Replace *umbilical assembly* and rerun test. Does problem still exist?	99500	99600
19700	Measure DC voltage between TP10 and TP8 on IJC board. Does voltage measure between -11.5 and -12.5?	19720	19740
19720	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
19740	Replace *low voltage power supply* and rerun test. Does problem still exist?	99500	99600
20100	Select **Fluid Tests** → **Power supplies**. Does test pass?	20110	19100
20110	Select **Fluid Tests** → **Ink pump / transducer**. Ink pump voltage low: and Ink pump current low: Ink pump current high: and Transducer buffer amplifier output: Transducer buffer amplifier output: Ink pump voltage high: Ink pump voltage low: Ink pump current high: Ink pump current low: Transducer buffer amplifier offset: Transducer offset high: Transducer offset low: Ink pump DAC voltage high: Ink pump DAC voltage low: Purge pump current high: Purge pump current low:	 20115 20120 20115 20115 20115 20800 20800 20115 20200 20300 20600 20600 20600 20600	
20115	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
20120	Turn printer off. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Ink pump / transducer**. Does Ink Pump Current High: and Transducer Buffer Amplifier Output: fail?	20130	20900
20130	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
20200	Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead shutdown** when complete. Select **fluid tests** → **ink pump / transducer**. Does Transducer Offset High: fail?	20250	99600
20250	Primary suspect *(printhead manifold)*; secondary suspect *(IJC board)* or *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
20300	Select **Fluid System** → **Printhead shutdown** when complete. Select **Fluid Tests** → **Ink pump / transducer**. Does Transducer Offset Low: fail?	20320	99600
20320	Unplug pressure transducer and J1 on IJC board. Measure continuity between pin A at transducer and pin 10, pin B and pin 9, and pin C and pin 11. Is continuity detected on all?	20330	20340
20330	Reconnect J1 on IJC board. Replace *printhead manifold* and rerun test. Does problem still exist?	99500	99600
20340	Unplug printhead component connector. Check for continuity from J8 on printhead component connector to J10 on J1 on IJC board, J9 on printhead component connector to J9 on J1 on IJC board, and J10 on printhead component connector to J11 on J1 on IJC board. Is continuity detected on all?	20350	20360
20350	Replace *umbilical* and rerun test. Does problem still exist?	99500	99600
20360	Replace *transducer assembly cable* and rerun test. **Note:** The *transducer assembly cable* is no longer a FRU; contact technical support about replacing this part. Does problem still exist?	99500	99600
20400	Select **Fluid Tests** → **Ink pump / transducer**. Does test pass?	20420	20100
20420	Replace *ink pump assembly* and rerun test. Does problem still exist?	99500	99600
20500	Select **Fluid Tests** → **Ink pump / transducer**. Does test pass?	20550	20100
20550	Primary suspect *(printhead assembly)*; secondary suspect *(bypass filter)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
20600	Is SW1 switch 7 up?	20700	20640
20640	Move SW1 switch 7 up. Turn printer off; then turn printer on. Does problem still exist?	20700	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
20700	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
20800	Unplug ink pump and J9 on IJC board. Check for continuity through fluid system DC cable J9 pin 1 to ink pump pin 1, J9 pin 2 to ink pump pin 2 and J9 pin 3 to ink pump pin 3. Is continuity detected on all?	20810	20820
20810	Replace *ink pump assembly* and rerun test. Does problem still exist?	99500	99600
20820	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
20900	Connect J9 IJC board. Primary suspect *(ink pump assembly)*. Secondary suspect *(fluid system DC cable*). Replace each component and rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
21100	Turn printer off; then turn printer on. Does problem still exist?	21200	99600
21200	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
22100	Select **Fluid Tests** → **AC relays**. Does test pass?	22200	09100
22200	Select **Fluid Tests** → **Power supplies**. Does test pass?	22300	19100
22300	Select **Fluid System** → **Printhead standby**. Examine NE4 on ACHV supply board. Does it light?	22400	22320
22320	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
22400	Primary suspect *(ink pump assembly)*. Secondary suspect *(fluid system AC cable)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
24100	Turn off power to printer at breaker; then turn printer on. Does problem still exist?	24200	24300
24200	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
24300	Set the following parameters: Cue distance Machine serial number Measured printhead height Current print mode Cue mode Charge volts Phase Cue delay Doc length Save cue error CONFIG Fill amount Does problem still exist?	99500	99600
25100	Select **Fluid Tests** → **Print control** Sweep available: Polarity at ACHV: Print pulse at ACHV: Latch enable line at ACHV: Polarity at printhead: and Print pulse line at printhead: and Latch enable line at printhead: Print pulse line at printhead: and Latch enable line at printhead: and Column request: Polarity at printhead: Print pulse line at printhead: Latch enable at printhead: Column request: Charge voltage DAC: Latch up: Charge current DAC: Short detect:	25140 25120 25120 25120 25450 25450 25250 25250 25250 25400 25700 25200 25600 25600	
25120	Primary suspect *(ACHV supply board)*; secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25140	Primary suspect *(IJC board)*; secondary suspect *(ACHV supply board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25200	Disconnect J1 on ACHV supply board and rerun test. Does problem still exist?	25220	25300
25220 (5120 only)	Primary suspect *(ACHV supply board)*; secondary suspect (*charge driver 120 board*). Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25220 (5240 only)	Primary suspect *(ACHV supply board)*; secondary suspect *(printhead assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
25250	Select **Fluid Tests** → **AC relays**. Does test pass?	25300	09100
25300 (5120 only)	Primary suspect *(charge driver 120 board)*. Secondary suspect *(ACHV supply board)* or *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or until test passes. Does problem still exist?	99500	99600
25300 (5240 only)	Primary suspect *(printhead assembly)*; secondary suspect (ACHV supply board), (*charge driver 120 board*), or *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25400	Disconnect J10 on IJC board and select **Fluid Tests** → **Print Control**. Does test pass?	25420	25410
25410	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
25420	Primary suspect (*DS output assembly board*); secondary suspect *(DS output to IJC cable)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25450	Primary suspect *(ACHV supply board)*; secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25600 (5120 only)	Disconnect printhead flex cable board and install service test board #1 in its place. Connect J1 to J1 and J2 to J2. Select **Fluid Tests** → **Print control**. Does same failure occur?	25740	25620
25600 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place. Turn printer on with POC by-passed and exit dialog box. Select **Fluid Tests** → **Print control**. Does same failure occur?	25740	25620
25620	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
25700	Examine Charge Current DAC (digital to analog converter). Does it fail?	25710	25715
25710	Examine Short Detect. Does it fail?	25720	25715
25715	Primary suspect *(ACHV supply board)*; secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
25720	Examine printhead front cover. Is it installed?	25724	25730
25724	Remove printhead front cover and install lockout switch actuator. Does problem still exist?	25740	25726
25726	The printhead front cover is not making contact with switch. Adjust switch so that contact is made. Does problem still exist?	99500	99600
25730	Examine lockout switch actuator. Is it installed?	25740	25735
25735	Printer does not run if printhead front cover or lockout switch actuator is not installed. Install printhead front cover or lockout switch actuator. Does problem still exist?	25740	99600
25740 (5120 only)	Unplug J7 on charge driver 120 board with lockout switch actuator installed. Check for continuity between pins 1 and 2 on switch cable. Is continuity detected?	25750	25770
25740 (5240 only)	Unplug J7 on charge driver interface 240 with lockout switch actuator installed. Check for continuity between pins 1 and 2 on switch cable. Is continuity detected?	25750	25770
25750	Remove lockout switch actuator and check for continuity between pins 2 and 3 on switch cable. Is continuity detected?	25760	25770
25760	Connect printhead and J7. Primary suspect *(ACHV supply board)*; secondary suspect *(charge driver 120 board)* or (*IJC board*). Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25770	Replace *interlock assembly switch* and rerun test. Does problem still exist?	99500	99600
25800	Select **Fluid Tests** → **Print control**. Does test pass?	25820	25100
25820	Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead clean**. Does error 13126: IJ-7E occur again?	25850	25830
25830	Does some other error occur?	25840	99600
25840	Diagnose the new error.		
25850 (5120 only)	Disconnect printhead flex cable board and install service test board #1 in its place. Connect J1 to J1 and J2 to J2 and install lockout switch actuator. Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead clean**. Does error 13126: IJ-7E occur?	25860	25870

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
25850 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install service test board #1 in its place. Install lockout switch actuator. Turn printer on with POC by-passed and exit dialog box. Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead clean**. Does error 13126: IJ-7E occur?	25860	25870
25860 (5120 only)	Connect printhead flex cable board. Primary suspect *(charge driver 120 board)*; secondary suspect *(ACHV supply board)* or *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25860 (5240 only)	Turn printer off. Connect charge DR to PH cable at printhead. Primary suspect *(printhead assembly*); secondary suspect *(ACHV supply board)*, *(IJC board)*, or *(charge driver 120 board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
25870	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
26100	Select **Fluid Tests** → **Umbilical**. SPB write/read: SPB clock/read: On board drop counter: Data clock at PH: Data clock driver: Data path 0 driver: Data path 1 driver: Data path 2 driver: Data path 3 driver: Data path 0 return: Data path 1 return: Data path 2 return: Data path 3 return: Tab reading:	 26150 26150 26150 26700 26250 26250 26250 26250 26250 26300 26300 26300 26300 04100	
26150	Turn printer off. Unplug ACHV to IJC cable and replace it with JP8. Turn printer on with POC by-passed. Select **Fluid Tests** → **Umbilical**. Does previous error occur?	26160	26170
26160	Reconnect ACHV to IJC cable. Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
26170	Reconnect ACHV to IJC cable. Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
26250	Primary suspect (*ACHV supply board*); secondary suspect *(ACHV to IJC* cable). Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
26300	Select **Fluid Tests** → **AC relays**. Does test pass?	26310	09100
26310	While selecting **Fluid Tests** → **Umbilical** examine LED D8, D9, D10, D11, and D12 on ACHV supply board. Do all flash?	26320	26330
26320	While selecting **Fluid Tests** → **Umbilical**, examine LED DS15 and DS16 on ACHV supply board. Do they flash?	26400	26500
26330 (5120 only)	Disconnect J2 on ACHV supply board. While selecting **Fluid Tests** → **Umbilical**, examine LED DS15 and DS16 on ACHV supply board. Do they flash?	26600	26340
26330 (5240 only)	Turn printer off. Disconnect charge DR to PH cable at printhead and install on service test board #2 at J9. Turn printer on with POC by-passed and exit dialog box. While selecting **Fluid Tests** → **Umbilical**, examine LED D8, D9, D10, D11, and D12 on ACHV supply board. Do they flash?	26350	26340
26340	Primary suspect *(ACHV supply board)*; secondary suspect *(ACHV to IJC cable)* or *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
26350	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
26400	Primary suspect *(ACHV supply board)*; secondary suspect *(IJC board)*, *(ACHV to IJC cable)*, *(charge driver 120 board)*, or *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
26500	Primary suspect (*charge driver 120 board*); secondary suspect *(umbilical assembly)* and *(ACHV supply board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
26600	Connect J2 on ACHV supply board. Primary suspect (charge driver 120 board); secondary suspect *(ACHV supply board)* or *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
26700	Examine Data Clock Driver: failed. Does test fail?	26720	26760

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
26720	Unplug J1 on ACHV supply board and select **Fluid Tests** → **Umbilical**. Examine Data Clock Driver: failed. Does test fail?	26740	26760
26740	Primary suspect (ACHV supply board); secondary suspect *(IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
26760 (5120 only)	Primary suspect (charge driver 120 board); secondary suspect *(umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
26760 (5240 only)	Primary suspect (*printhead assembly*); secondary suspect *(charge driver 120 board) or (umbilical assembly)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
27100	Select **Fluid System** → **Acknowledge error**. Select **Fluid System** → **Printhead Printhead**. Select **Fluid Tests** → **Ink pump / transducer**. Does test pass?	27210	27120
27120	Select **Fluid Tests** → **Ink pump / transducer**. Does Transducer Offset Low: Only fail?	27150	20100
27150	Disconnect printhead outlet tube. Select **Fluid Tests** → **Ink Pump / transducer**. Does test pass?	27200	27180
27180	Reconnect printhead outlet tube and go to step 20100.		
27200	Reconnect printhead outlet tube and go to step 27210.		
27210	Select **Fluid System** → **Select state table type** → **Purge.** Select **Fluid System** → **Printhead to state #3**. Disconnect inlet to printhead. Does ink return to tank through tube #2?	27220	27250
27220	Select **Fluid System** → **Printhead shutdown**. Select **Fluid System** → **Select state table type** → **Circulate**. Select **Fluid System** → **Printhead to state #6** for 15 minutes. Select **Fluid System** → **Printhead down**. Select **Fluid System** → **Select state table type**. Select **Fluid System** → **Printhead clean**. Does same failure occur?	27500	99600
27250	Disconnect return orifice assembly fitting at manifold and catcher line (quick-disconnect or Silastic fitting). Does ink return to tank through tube #2?	27300	27310
27300	Reconnect return orifice assembly fitting at manifold and catcher line (quick-disconnect or Silastic fitting). Replace *crossflush valve* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
27310	Reconnect return orifice assembly fitting at manifold and catcher line (quick-disconnect or Silastic fitting). Replace *return orifice assembly* and rerun test. Does problem still exist?	99500	99600
27500	Select **Fluid System** → **Printhead shutdown**. Select **Fluid System** → **Select state table type** → **Circulate**. Select **Fluid System** → **Printhead to state #6**. Select **Fluid System** → **Diagnostic status**. Does vacuum level measure less than 75?	27520	27540
27520	Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
27540	Replace *by-pass filter* and rerun test. Does problem still exist?	99500	99600
28100	Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Printhead shutdown**. Select **Fluid Tests** → **Ink pump / transducer**. Do tests pass?	28150	20100
28150	Examine ink tank. Does tank contain ink?	28200	28400
28200	Disconnect inlet and outlet tubes from printhead and connect them together; connect other tubes together. Select **Fluid System** → **Select state table type** → **Circulate**. Select **Fluid Tests** → **Printhead to state #6**. Does printhead reach state #6?	28330	28210
28210	Disconnect catcher line (quick-disconnect or Silastic fitting) at printhead. Select **Fluid System** → **Acknowledge error.** Select **Fluid System** → **Select state table type** → **Purge**. Select **Fluid Tests** → **Printhead to state #3.** Disconnect tube number #1 at top of ink filter. Examine ink tank lines #1 and #2. Are lines draining?	28220	28310
28220	Select **Fluid System** → **Printhead down**. Reconnect printhead and catcher line (quick-disconnect or Silastic fitting). Primary suspect *(ink pump assembly)*; secondary suspect *(printhead manifold)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
28310	Primary suspect *(anti-siphon valve)*; secondary suspect *(printhead manifold)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
28330	Select **Fluid System** → **Printhead down**. Disconnect catcher line (quick-disconnect or Silastic fitting) at printhead. Select **Fluid System** → **Select state table type** → **Purge**. Select **Fluid System** → **Printhead to state #1**. Disconnect tubes from manifold that by-pass printhead. Examine ink tank line #2. Is line draining?	28340	28350

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
28340	Reconnect printhead and catcher disconnect. Select **Fluid System** → **Printhead down.** Replace *crossflush valve* and rerun test. Does problem still exist?	99500	99600
28350	Reconnect printhead and catcher disconnect. Select **Fluid System** → **Printhead down.** Replace *printhead assembly* and rerun test. Does problem still exist?	99500	99600
28400	Examine ink bottle. Is ink bottle empty?	28410	28420
28410	Replace *ink bottle*. Does problem still exist?	99500	99600
28420	Select **Fluid System** → **Select state table type** → **Circulate**. Select **Fluid System** → **Printhead to state #2**. Is ink tank filling?	28430	28440
28430	When ink tank is filled, go to step 20100.		
28440	Turn printer off. Install service JP5 in place of ink float switch. Turn printer on with POC by-passed. Select **Fluid System** → **Printhead to state #2**. Select **Fluid System** → **Printhead down** after determining that the ink tank is filling.	28450	28480
28450	Turn printer off. Disconnect J9 on IJC board and disconnect float switch. Measure for continuity on fluid system DC cable between pin 13 on J9 and pin 3 on float switch connector and pin 14 on J9 and pin 4 on float switch connector. Is continuity detected on both?	28470	28460
28460	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
28470	Replace *float switch assembly* and rerun test. Does problem still exist?	99500	99600
28480	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
29100	Unscrew positive air filter and insert test fitting 3. Select **Fluid System** → **Printhead down**. Does error code 13022 IJ-16 occur?	29110	29120
29110	Reinstall positive air filter. Go to step 01100.		
29120	Replace *positive air filter* and rerun test. Does problem still exist?	99500	99600
33100	If more than one error is generated, examine other error first. Does error occur after next printhead command?	33120	99600
33120	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
34100	Select **Fluid Tests** → **Power supplies**. Does test pass?	34120	19100

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
34120	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
35100	Select **Fluid Tests** → **Print control**. Does test pass?	35200	25100
35200	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
37100	While using Printhead To State# to select a state table, you have remained in one state too long. Does problem still exist?	99500	99600
39100	Unplug tach and cue cable at J4 on IJC board and select **Fluid Tests** → **Tach and cue**. Does test pass?	39200	39150
39150	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
39200	Primary suspect *(external problem with tach and cue)*; secondary suspect *(tach and cue cable)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
40100	Clear any paper jams and Select **Fluid System** → **Reset cue system**. Re-define document length, cue distance, and cue delay. Start printing again. Does problem still exist?	99500	99600
41100	Examine POWER on printer operator panel. Is it on?	41500	41120
41120	Examine circuit breaker on printer rear panel. Is circuit breaker on?	41160	41140
41140	Turn circuit breaker on. Does problem still exist?	99500	99600
41160	Examine D53 on IJC board. Is it on?	41180	41300
41180	Unplug J3 on IJC board. Measure continuity between pins 13 and 23 on cable while pressing PRINTER ON on printer operator panel. Is continuity detected?	41200	41220
41200	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
41220	Unplug cable from printer operator panel assembly. Measure continuity between pins 13 and 23 on printer operator panel while pressing PRINTER ON on printer operator panel. Is continuity detected?	41240	41260
41240	Replace *OP panel to IJC cable* and rerun test. Does problem still exist?	99500	99600
41260	Replace printer *operator panel assembly* and rerun test. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
41300	Examine ACHV to IJC cable. Is it plugged in?	41340	41320
41320	Plug cable in. Does problem still exist?	41340	99600
41340	Unplug J3 on ACHV supply board; measure AC voltage on pins 1 and 3 on cable. Is AC line voltage detected?	41350	41380
41350	Examine fuse F2 on ACHV supply board. Is fuse damaged?	41360	41370
41360	Replace *fuse 40MA ACHV* and rerun test. Does problem still exist?	41365	99600
41365	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
41370	Primary suspect *(ACHV supply board)*; secondary suspect *(ACHV to IJC cable) or (IJC board)*. Replace each component; rerun test for each component until all components are replaced or test passes. Does problem still exist?	99500	99600
41380	Measure AC voltage on power cord to printer. Is AC line voltage detected?	41420	41400
41400	Replace *power cord* and rerun test. Does problem still exist?	99500	99600
41420	Measure AC voltage across bottom terminals of circuit breaker. Is AC voltage detected?	41460	41440
41440	Replace *AC line filter assembly* and rerun test. Does problem still exist?	99500	99600
41460	Measure AC voltage across top terminals of circuit breaker. Is AC voltage detected?	41480	41490
41480	Replace *breaker to ACHV cable* and run test. Does problem still exist?	99500	99600
41490	Replace *circuit breaker* and rerun test. Does problem still exist?	99500	99600
41500	Press PRINTER ON on printer operator panel to turn printer on; press PRINTER ON again to turn printer off. Does D47 on ACHV supply board go on and off?	41540	41520
41520	Turn printer off at breaker. Unplug connector J9 on IJC board and install JP6. Turn printer on with POC by-passed Does printer come on?	41560	41650
41540	With D47 on, is AC fan running?	19100	41740
41560	Examine ink tank ink level. Does ink level measure less than 4 inches from tank mounting plate?	41700	41580

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
41580	Turn printer off at breaker. Unplug JP6 and reconnect J9 on IJC board. Disconnect float switch assembly. Install JP3 in float switch connector. Turn printer on with POC by-passed. Does printer come on?	41600	41620
41600	Replace *float switch assembly* and rerun test. Does problem still exist?	99500	99600
41620	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
41650	Unplug J3 on IJC board. Measure continuity between pins 13 and 23 on OP panel to IJC cable while pressing PRINTER ON on printer operator panel. Is continuity detected?	41660	41670
41660	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
41670	Primary suspect (*printer operator panel assembly*); secondary suspect *(OP panel to IJC cable)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
41700	Drain tank to half-full and unplug ink fill and ink replenish valves. Turn printer off at breaker and reconnect J9 on IJC board. Install jumper service JP3 in place of float switch. Turn printer on with POC by-passed. Select **Fluid System → Select state table type → Circulate**. Select **Fluid System → Printhead to state #1**. Is ink or replenish flowing in tubing from bottles?	41720	41800
41720	Unplug JP3 and connect float switch, fill valve, and replenish valve. Replace leaking *ink or replenish fill valve assembly* and rerun test. Does problem still exist?	99500	99600
41740	Replace *ACHV supply board* and rerun test. Does problem still exist?	99500	99600
41800	Turn printer off. Disconnect J9 on IJC board and disconnect float switch. Measure for continuity on fluid system DC cable between pin 11 on J9 and pin 1 on float switch connector and pin 12 on J9 and pin 2 on float switch connector. Is continuity detected on both?	41820	41810
41810	Replace *fluid system DC cable* and rerun test. Does problem still exist?	99500	99600
41820	Primary suspect *(float switch assembly)*; secondary suspect *(ACHV supply board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
42100	Turn printer off. Turn printer on with POC by-passed. Examine printer operator panel for lights that do not come on. Stand-By: Test Print: Open Eyelid: Clean Printhead: Printer On: Add Purge Fluid: Add Replenisher: Add Ink: Error: Data: Tach: Cue: Power:	42150 42200 42250 42300 42350 42400 42450 42500 42550 42600 42650 42700 42750	
42150	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 10. Does voltage measure above 1 volt?	42900	42920
42200	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 8. Does voltage measure above 1 volt?	42900	42920
42250	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 4. Does voltage measure above 1 volt?	42900	42920
42300	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 12. Does voltage measure above 1 volt?	42900	42920
42350	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 14. Does voltage measure above 1 volt?	42900	42920
42400	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 17. Does voltage measure above 1 volt?	42900	42920
42450	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 16. Does voltage measure above 1 volt?	42900	42920
42500	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 15. Does voltage measure above 1 volt?	42900	42920

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
42550	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 18. Does voltage measure above 1 volt?	42900	42920
42600	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 22. Does voltage measure above 1 volt?	42900	42920
42650	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 20. Does voltage measure above 1 volt?	42900	42920
42700	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 21. Does voltage measure above 1 volt?	42900	42920
42750	Disconnect J3 on IJC board. Place meter on diode; measure on cable red lead to pin 24 and black lead to pin 19. Does voltage measure above 1 volt?	42900	42920
42900	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
42920	Primary suspect *(printer operator panel assembly)*; secondary suspect *(OP panel to IJC cable)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
43100	Examine printer operator panel and select **Fluid Tests** → **7 segment display**. Do all lights (excluding POWER) come on and go off individually?	43200	43300
43200	No problem is detected.	99500	99600
43300	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
44100	Examine LEDs D28, D29, and D30 on IJC board. Are they on?	44115	19100
44115	Select **Fluid Tests** → **Diagnostic status** while examining D73 on IJC board. Does it flash?	44200	44110
44110	Examine LEDs D80, D81, D83, and D85. Are they on?	44400	44120
44120	Examine 7 segment display on DS main board. Is it displaying 888 or flashing?	44140	44200
44140	Disconnect J10 on IJC board; push reset SW1 on IJC board. Is 7 segment display displaying 888 or flashing?	44300	44420
44200	Push reset SW1 on IJC board. Does printer generate an error or start POC tests?	44220	44300

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
44220	Unplug J6 on DS main board and push reset SW1 on IJC board. Does printer generate an error or start POC tests?	44420	44300
44300	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
44400	Examine LEDs D74, D75, and D77. Are they on?	44420	44440
44420	Primary suspect *(DS main board)*; secondary suspect *(DS Main to IJC cable)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
44440	Primary suspect *(IJC board);* secondary suspect *(DS main board)*. Replace each component; and rerun test for each component until test passes. Does problem still exist?	99500	99600
45100	Examine 7 segment display on DS main board. Is center bar of third-eight flashing?	45120	60100
45120	Disconnect J6 on DS main board and select **Data System** → **Status**. Is IJ2E-E7 error generated?	45130	44420
45130	Primary suspect *(IJC board)*; secondary suspect *(DS main to IJC cable)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
46100	Select **Fluid Tests** → **Front panel buttons**. On the printer operator panel, press button under light that comes on. **Do not press PRINTER ON.** Eyelid button stuck on: Test print button stuck on: Standby button stuck on: Clean button stuck on: Eyelid button sensed: Test print sensed: Standby button sensed: Clean button sensed:	 46200 46200 46200 46200 46300 46320 46340 46360	
46200	Disconnect J3 on IJC board. Select **Fluid Tests** → **Front panel buttons**. Does Button Stuck On: fail?	46440	46460
46300	Disconnect J3 on IJC board; measure continuity between pin 24 and pin 3 while pressing OPEN EYELID. Is continuity detected?	46440	46460
46320	Disconnect J3 on IJC board; measure continuity between pin 24 and pin 7 while pressing TEST PRINT. Is continuity detected?	46440	46460
46340	Disconnect J3 on IJC board; measure continuity between pin 24 and pin 9 while pressing STANDBY. Is continuity detected?	46440	46460

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
46360	Disconnect J3 on *IJC board*; measure continuity between pin 24 and pin 11 while pressing CLEAN PRINTHEAD. Is continuity detected?	46440	46460
46440	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
46460	Primary suspect *(printer operator panel)*; secondary suspect *(OP panel to IJC cable)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
50100	Examine printer operator panel. Is DATA READY on?	50110	62100
50110	With transport moving, examine TACH on printer operator panel. Is it flashing?	50120	50130
50120	With TACH flashing, move a piece of paper under cue sensor. Does CUE flash on printer operator panel?	50200	50250
50130	Examine TACH. Is it turning?	50150	50140
50140	Fix tach encoder. Does problem still exist?	99500	99600
50150	Primary suspect *(tach assembly)*; secondary suspect *(IJC board)*, *(DS main to IJC cable)*, or *(DS main board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
50200	Verify that printhead is not printing on base (instead of substrate) and that printable data is being sent to printer.	99500	99600
50250	With TACH flashing, move a piece of paper under cue sensor. Does CUE flash?	50260	50270
50260	Primary suspect *(IJC board)*; secondary suspect *(DS main to IJC cable)* or *(DS main board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
50270	Adjust sensitivity of cue sensor or replace *cue sensor.* Does problem still exist?	99500	99600
51100	Verify that software on IJC board is compatible with DS main board software. Is software compatible?	51150	51200
51150	Install new software. Does problem still exist?	99500	99600
51200	Install comparable software. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
52100	Verify that cue setup is correct. Is cue setup correct?	52200	52150
52150	Re-define cue setup. Does problem still exist?	52200	99600
52200	Replace *IJC board* and rerun test. Does problem still exist?	99500	99600
53100	Examine DATA READY light. Is light on?	53150	62100
53150	Replace *IJC board* and rerun test. Does problem still exist?	99500	99500
54100	Print has extended past document being printed. Verify that cue distance and cue delay are set correctly. Does problem still exist?	99500	99600
60100	Examine 7 segment display on DS main board. Is center bar of third-eight flashing?	44100	60110
60110	Examine 7 segment display on DS main board and locate number displayed. No LED Lit (Blank / No power): FFFF This is power up state before software runs: 9100 No SIMM 1 found: 9101 No SIMM 2 found: 9102 SIMM 2 changed while writing to SIMM 1: 9103 SIMM 1 Does not get pattern: 9104 SIMM 1 changed while writing to SIMM 2: 9105 SIMM 2 Does not get pattern: 9107 SIMM 1 failed the mod 255 count pattern: 9108 SIMM 2 failed the mod 255 count pattern: 9E01 Centronics FIFO will not go empty: 9E02 No timer 0 pending: 9E03 No timer 1 pending: Any other number:	 19100 60200 60400 60450 60450 60400 60400 60450 60400 60450 60120 60120 60120 60120	
60120	Push Reset SW1 on DS main board. Does same error occur?	60190	60130
60130	Correct error.		
60190	Replace *DS main board*. Does problem still exist?	99500	99600
60200	Examine flash card. Is it installed?	60230	60220
60220	Install flash card. Does problem still exist?	60230	99600
60230	Primary suspect *(DS main board)*; secondary suspect *(flash card)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
60400	Remove memory board from J14 on DS main board and wipe off contacts. Reinstall. Does problem still exist?	60410	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
60410	Replace *DS main board*. Does problem still exist?	99500	99600
60450	Remove memory board from J13 on DS main board and wipe off contacts. Reinstall. Does problem still exist?	60460	99600
60460	Replace *DS main board*. Does problem still exist?	99500	99600
61100	Examine PRINTER ON. Is it on?	60110	41100
61105	Examine lower left three lights on printer operator panel. Are they on?	60100	61110
61110	Verify that printer COM port cable is plugged in and PC is set to right COM port. Does problem still exist?	61115	99600
61115	Verify that word size is set right. Factory setting for word size is 8. Select **Data System** → **Read Dip Switches**. If SW position 1 is closed, it is set to word size 8. If open, word size is 7. If DIP switch changes, turn printer off and then on. Does problem still exist?	61120	99600
61120	Verify that parities match. Factory setting is None. On DS main board SW: Position 2 open and position 3 open = none; Position 2 closed and position 3 open = odd; Position 2 closed and position 3 closed = even. If DIP switch changes, turn printer off and then on. Does problem still exist?	61130	99600
61130	Verify that baud rates match. Factory setting is 9600. On DS main board SW: Position 4 open and position 5 open = 9600; Position 4 closed and position 5 open = 19200; Position 4 open and position 5 closed = 38400; Position 4 closed and position 5 closed = 57600. If DIP switch changes, turn printer off and then on. Does problem still exist?	61135	99600
61135	Examine LEDs DCD, CTR, RDA, and DSR on DS main board. Are they on?	61140	61300
61140	Examine LEDs DTR, PR, RTS on DS main board. Are they green?	61150	61320
61150	Examine LED TDA on DS main board. Is it red?	61170	61320
61170	Select **Data System** → **Status** while examining green LED RDA on DS main board. Does it flash?	61180	61320
61180	Select **Data System** → **Status** while examining green LED TDA on DS main board. Does it flash?	61300	61190

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
61190	Replace *DS main board.* Does problem still exist?	99500	99600
61300	Plug serial cable into a different COM port on PC. Examine LEDs DCD, CTR, RDA, and DSR on DS main board. Are they on?	61310	61320
61310	Replace *computer* if plugged into COM1 or COM2. Replace *COM3/LPT2 or COM4/LPT3 board* if plugged into COM3 or COM4. Does problem still exist?	99500	99600
61320	Replace *DS main board.* Does problem still exist?	99500	99600
62100	Press OPEN EYELID on printer operator panel. Press TEST PRINT. Does DATA READY come on?	62160	62140
62140	Primary suspect *(DS Output board)*; secondary suspect *(DS main board) or (IJC board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
62160	Print a test pattern. Is print quality satisfactory?	62300	62170
62170	Does it look like a test pattern?	62190	62180
62180	Replace *DS main board.* Does problem still exist?	99500	99600
62190	Adjust phase and volts per Appendix C. Does problem still exist?	62200	99600
62200	Primary suspect *(DS output board)*; secondary suspect *(DS main board) or (IJC board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
62300	Run job again. Does problem still exist?	62320	99600
62320	Primary suspect *(DS main board)*; secondary suspect *(computer)*. Replace if plugged into LPT1. Replace *COM3/LPT2 board or COM4/LPT3 board* if plugged into LPT2 or LPT3. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
63100	PC is too slow. Replace *computer.* Does problem still exist?	99500	96000
63200	Replace *DS main board.* Does problem still exist?	99500	99600
64100	Turn printer off and then on. Does problem still exist?	64150	99600
64150	Replace *DS main board.* Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
65100	Set default to 6148. Does problem still exist?	65150	99600
65150	Replace *DS main board.* Does problem still exist?	99500	99600
66100	Select **Data System** → **Status**. Examine data system and fluid system version number. Does first number match?	66140	66150
66140	Replace *DS main board.* Does problem still exist?	99500	99600
66150	Replace software. Does problem still exist?	99500	99600
67100	Turn printer off and then on. Does problem still exist?	67150	99600
67150	Primary suspect *(DS main board)*; secondary suspect *(DS output board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
68100	Turn printer off and then on. Does problem still exist?	68150	99600
68150	Primary suspect *(DS output board)*. Secondary suspect *(DS main board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
68100	Verify that all cables from host to K4K board are connected. Are all cables connected?	68200	68150
68150	Connect cables. Does problem still exist?	99500	99600
68200	Primary suspect *(host)*; secondary suspect *(DS main board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
69100	Verify that K4K assembly board is connected. Is K4K assembly board connected?	69150	69120
69120	Connect K4K assembly board. Does problem still exist?	99500	99600
69150	Primary suspect *(K4K assembly board)*; secondary suspect *(K4K motherboard board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
70100	Verify that K4K assembly board is connected. Is K4K assembly board connected?	70200	70150
70150	Connect K4K assembly board. Does problem still exist?	99500	99600

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
70200	Primary suspect *(DS main assembly board)*; secondary suspect *(K4K assembly board)* or *(K4K motherboard board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
71100	Verify that K4K assembly board is connected. Is K4K assembly board connected?	71200	71150
71500	Connect K4K assembly board. Does problem still exist?	99500	99600
71200	Primary suspect *(K4K assembly board)*; secondary suspect *(DS main assembly board)* or *(K4K motherboard board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
72100	Turn printer off and then on. Does problem still exist?	72150	99600
72150	Replace *flash card.* Does problem still exist?	99500	99600
73100	Turn printer off and then on. Does problem still exist?	73150	99600
73150	Primary suspect *(DS main board)*; secondary suspect *(flash card)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
80100	Verify that memory is sufficient for requested operation. Is memory sufficient?	80600	80150
80150	Install more memory. Does problem still exist?	99500	99600
80600	Replace *computer.* Does problem still exist?	99500	99600
81100	If password is lost, delete file PRINT.CNF. Does problem still exist?	81150	99600
81150	Reload software. Does problem still exist?	99500	99600
82100	Turn computer off and then on. Does problem still exist?	99500	99600
83100	Turn computer off and then on. Does problem still exist?	83130	99600
83130	Primary suspect *(corrupt file)*; secondary suspect *(computer)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
84100	Verify drive contains enough disk space for requested operation. Does drive contain enough space?	84300	84350

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
84200	Delete the PRINT.EVN file. Does problem still exist?	84300	99600
84300	Turn computer off and then on. Does problem still exist?	99500	99600
84350	Delete any unnecessary files. Does problem still exist?	99500	99600
85100	Turn computer off and then on. Does problem still exist?	85150	99600
85150	Replace *computer* if connected to COM1 or COM2. Replace *COM3/LPT2 board or COM4/LPT3 board* if connected to COM3 or COM4. Does problem still exist?	99500	99600
86100	Turn computer off and then on. Does problem still exist?	86150	99600
86150	Replace *SCSI controller board* if connected to LPT1. Replace *COM3/LPT2 board* or *COM4/LPT3 board* if connected to LPT2 or LPT3.	99500	99600
87100	Wait until printer is ready. Does problem still exist?	87150	99600
87150	Perform a data system status. Does problem still exist?	87200	99600
87200	Turn computer off and then on. Does problem still exist?	99500	99600
88100	Examine tape drive. Is it on?	88200	88150
88150	Turn tape drive on. Does problem still exist?	99500	99600
88200	Primary suspect *(tape drive)*; secondary suspect *(SCSI controller board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
88500	Turn computer off and then on. Does problem still exist?	99500	99600
99300	When a print problem is detected in print samples, perform the following steps: Remove printhead cover and clean print array slot inside and out with a damp, lint-free cloth. Replace cover. Select **Fluid System** → **Printhead clean**. Set proper voltage and phase. If crooked jets still occur, go to step 99400. If irregular gaps still appear in print sample after re-setting phase, go to 99340. If one half of sample prints black or does not print at all, go to 99390.		

Table 3.2 DTR procedures (Continued)

Step	Procedure	Yes	No
99340	Primary suspect *(printhead assembly)*; secondary suspect *(DS output board) or (DS main board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
99390	Primary suspect (DS output board); secondary suspect *(IJC board)*. Replace each component; rerun test for each component until test passes. Does problem still exist?	99500	99600
99400	Printhead 5120 or 5240 Swabbing Procedure described in the 5000 Series Printers *Operator's Guide*.		
99500	Entry to this line indicates failure of the DTRs to correct the fault. Review the following suggestions to isolate the problem. 1. Review or rerun DTR procedure to verify that correct test points and procedures have been followed. Note: When a list of tests is returned, start reading list from top until failed test is located. 2. Measure DC voltages supplied to IJC board. The voltages should measure as follows: TP8 to TP9 11.5 to 12.5 TP8 to TP7 5.0 to 5.25 TP8 to TP6 23.0 to 26.0 TP8 to TP10 -11.5 to -12.5 3. Inspect all electrical connections for loose connections and ink contamination. (Ink is conductive.) 4. Select **Fluid System** → **Error List** to search for other errors that may be causing the problem. 5. Check all vacuum lines for improper connections and cuts. 6. Review information in step 99300. 7. The DTRs assume that only one error has been generated for the printer; however, multiple problems may exist. These problems may cause the same error code or a second error code in a subsequent test. Follow the second error code DTR procedure if the first problem cannot be corrected. 8. If a POC failure has occurred, review the bit definitions to locate the problem (see Table 3.3).		
99600	End of procedure. Verify proper operation.		

Bit Definitions

Table 3.3 lists the bit definitions for the diagnostics tests performed in the DTRs. A value of 0 indicates a passed test. A value of 1 indicates a failed test.

Table 3.3 Bit definitions

Word	Bit	Test / Function
	0	Current fault interrupt failure
	9	Milliliter interrupt failure
	10	Print done cycle interrupt failure
	11	Print sync interrupt failure
	12	Lag counter interrupt failure
	13	Lead counter interrupt failure
	14	EOD interrupt failure
	15	BOD interrupt failure
		Test AC Relay Drivers
First Sent	0	Vacuum pump relay driver sensed ON and should be OFF
	1	Ink heater relay driver sensed ON and should be OFF
	2	Ink heater current sensed with driver off
	3	Sort A relay driver sensed ON and should be OFF
	4	Spare AC relay driver sensed ON and should be OFF
	5	Ink heater failed to turn off after test
	6	Base stop relay driver sensed ON and should be OFF
Second Sent	0	Vacuum pump relay driver sensed OFF and should be ON
	1	Ink heater relay driver sensed OFF and should be ON
	2	Ink heater current sense circuit failure
	3	Sort A relay driver sensed OFF and should be ON
	4	Spare AC relay driver sensed OFF and should be ON
	5	Ink heater current not detected and should be
	6	Base stop relay driver sensed OFF and should be ON
	7	ACHV supply board not detected
		Test Solenoid and Catcher Heater Drivers
First Sent	0	Catcher heater driver sensed ON and should be OFF
	1	Eyelid solenoid high driver sensed ON and should be OFF
	2	Eyelid solenoid low driver sensed ON and should be OFF
	3	Anti siphon solenoid driver sensed ON and should be OFF
	4	Crossflush solenoid driver sensed ON and should be OFF
	5	Reserved
	6	Ink fill solenoid driver sensed ON and should be OFF
	7	Replenish fill solenoid driver sensed ON and should be OFF
Second Sent	0	Catcher heater driver sensed OFF and should be ON
	1	Eyelid solenoid hi driver sensed OFF and should be ON
	2	Eyelid solenoid lo driver sensed OFF and should be ON
	3	Anti siphon solenoid driver sensed OFF and should be ON
	4	Crossflush solenoid driver sensed OFF and should be ON
	5	Reserved

Table 3.3 Bit definitions (Continued)

Word	Bit	Test / Function
	6	Ink fill solenoid driver sensed OFF and should be ON
	7	Replenish fill solenoid driver sensed OFF and should be ON
Third Sent	0	Gap injection solenoid driver sensed ON and should be OFF
	1	Catcher solenoid driver sensed ON and should be OFF
	2	Purge fill solenoid driver sensed ON and should be OFF
	3	Purge in solenoid driver sensed ON and should be OFF
	4	Purge out solenoid driver sensed ON and should be OFF
	5	Reserved
	6	Reserved
	7	Purge pump driver sensed ON and should be OFF
Fourth Sent	0	Gap injection solenoid driver sensed OFF and should be ON
	1	Bit 1 - catcher solenoid driver sensed OFF and should be ON
	2	Bit 2 - purge fill solenoid driver sensed OFF and should be ON
	3	Bit 3 - purge in solenoid driver sensed OFF and should be ON
	4	Bit 4 - purge out solenoid driver sensed OFF and should be ON
	5	Bit 5 - reserved
	6	Bit 6 - reserved
	7	Bit 7 - purge pump driver sensed OFF and should be ON
		Test Print Mode Control
First Sent	0	POL failure at printhead
	1	POL failure at ACHV supply board
	2	PRTPUL failure at printhead
	3	PRTPUL failure at ACHV supply board
	4	LATEN failure at printhead
	5	LATEN failure at ACHV supply board
	6	Reserved
	7	Reserved
	8	Charge voltage DAC failure
	9	Latch up
	10	Charge current DAC failure
	11	Short detect failure
	12	Short detect failure
Second Sent	0	COLREQ failure
	1	SWEEP failure
		Test Tach and Cue
First Sent	0	Tach cue interrupt failure
	1	BOD interrupt failure
	2	EOD interrupt failure
	3	Lead counter interrupt failure
	4	Print enable not sensed high
	5	Lag counter interrupt failure
	6	Print enable not sensed low
	7	BOD counter failure
	8	Lead counter failed to start from terminal count
	9	Lag counter failed to start from terminal count

Table 3.3 Bit definitions (Continued)

Word	Bit	Test / Function
	10	Document speed counter failure
	11	EOD counter failure
	12	Reserved
	13	Reserved
	14	Reserved
		Send DIP Switch Setting to Host
First Sent	0	DIP switch 1
	1	DIP switch 2
	2	DIP switch 3
	3	DIP switch 4
	4	DIP switch 5
	5	DIP switch 6
	6	DIP switch 7
	7	DIP switch 8
		Solenoid Motion Test
First Sent	0	Reserved
	1	Eyelid solenoid hi driver failure
	2	Eyelid solenoid not connected
	3	Anti siphon solenoid not connected
	4	Cross flush solenoid not connected
	5	Reserved
	6	Ink fill solenoid not connected
	7	Replenish fill solenoid not connected
Second Sent	0	Eyelid motion failure
	1	Anti-siphon valve motion failure
	2	Crossflush valve motion failure
	3	Replenish fill valve motion failure
	4	Ink fill valve motion failure
	5	Reserved
	6	Reserved
	7	Reserved
Third Sent	0	Gap injection solenoid not connected
	1	Catcher solenoid not connected
	2	Purge fill solenoid not connected
	3	Purge input solenoid not connected
	4	Purge outlet solenoid not connected
	5	Reserved
	6	Reserved
	7	Reserved
Fourth Sent	0	Gap injection valve motion failure
	1	Catcher solenoid valve motion failure
	2	Purge fill valve motion failure
	3	Purge input valve motion failure
	4	Purge outlet valve motion failure
	5	Reserved

Table 3.3 Bit definitions (Continued)

Word	Bit	Test / Function
	6	Reserved
	7	Reserved
		Ink System Test
First Sent	0	Ink pump voltage too high
	1	Ink pump voltage too low
	2	Ink pump current too high
	3	Ink pump current too low
	4	Transducer offset too high
	5	Transducer offset too low
	6	Transducer buffer amplifier too high
	7	Transducer buffer amplifier failure
	8	Ink pump DAC voltage too high
	9	Ink pump DAC voltage too low
Second Sent	0	Reserved
	1	Reserved
	2	Purge pump too high
	3	Purge pump current too low
	4	Reserved
	5	Reserved
	6	Reserved
	7	Reserved
		Positive Air System Test
First Sent	0	Purge float sw detected and should not be
	1	Positive air detected and should not be (switch closed)
	2	Positive air not detected and should be (switch open)
	3	Tank temp sensor out of range
	4	Print head temp sensor out of range
	5	Spill sensor(s) indicate spill present
	6	Read mux as low error (mux does not read low)
	7	Catcher heater driver does not turn on
	8	Catcher heater current detected (catcher open)
	9	Catcher heater driver does not turn off
	10	Read mux as high error (mux does not read high)
	11	Catcher heater volts too high
	12	Reserved
	13	Reserved
	14	Reserved
		Vacuum System Test
First Sent	0	Vacuum transducer offset too high
	1	Vacuum reads too high with valve open
	2	Vacuum transducer offset too low
	3	Vacuum reads too low with valve closed
	4	Vacuum reads too high with valve closed
	5	Buffer amplifier tests too low
	6	Reserved

Table 3.3 Bit definitions (Continued)

Word	Bit	Test / Function
	7	Reserved
Second Sent	0	Stepper phase 0 driver not working
	1	Stepper phase 1 driver not working
	2	Stepper phase 2 driver not working
	3	Stepper phase 3 driver not working
	4	Stepper phase 0 winding not connected
	5	Stepper phase 1 winding not connected
	6	Stepper phase 2 winding not connected
	7	Stepper phase 3 winding not connected
Third Sent	0	Catcher vacuum transducer offset too high
	1	Catcher vacuum transducer offset too low
	2	Catcher vacuum buffer amplifier tests too high
	3	Catcher vacuum buffer amplifier tests too low
	4	Reserved
	5	Reserved
	6	Reserved
	7	Reserved
Fourth Sent	0	Reserved
	1	Reserved
	2	Reserved
	3	Reserved
	4	Reserved
	5	Reserved
	6	Reserved
	7	Reserved
		Umbilical Test
First Sent	0	Serial peripheral bus write or read line failed
	1	Serial peripheral bus clock or read line failed
	2	Reserved
	3	Datapath 0 driver failed
	4	Datapath 1 driver failed
	5	Datapath 0 returned from printhead failed
	6	Datapath 1 returned from printhead failed
	7	Data clock failed
	8	Tab reading failed
	9	Drop counter failed
	10	Data path 2 driver failed
	11	Data path 3 driver failed
	12	Data path 2 returned from printhead failed
	13	Data path 3 returned from printhead failed

Chapter 4. State Tables

This chapter contains the current state tables for the 5000 series printers. State tables are dynamic. The tables in this chapter are for the software versions listed in Table 4.1; they are current as of the date of publication.

New tables are published as required with software updates. Check the Scitex Digital Printing, Inc. customer website for state table updates (for the site URL, see “Scope”).

Table notation is described in the first section.

Table Notation

Tables in this section explain the following aspects of the state tables:

- Tables names
- Column names and abbreviations
- Test functions.

Table Names

Table 4.1 lists the state tables provided for each printer.

Table 4.1 Current state tables and software versions, 5000 series printers

Printer	5120	Early 5240	Current 5240	5122
Version	**1.64**	**3.49**	**4.05**	**5.52**
Table Number / Table Name / Umbilical Length (ft)	1. Normal Up 12	14. Normal Up, 12	25. Normal Up, 12	35. Normal Up, 12
	2. Normal Up 24	15. Normal Up, 24	26. Normal Up, 24	36. Normal Up, 24
	3. Circulate, 12	16. Circulate, 12	27. Circulate, 12	37. Circulate, 12
	4. Circulate, 24	17. Circulate, 24	28. Circulate, 24	38. Circulate, 24
	5. Purge, 12	18. Purge	29. Purge	39. Purge
	6. Purge, 24			
	7. Normal Down, 12	19. Normal Down	30. Normal Down	40. Normal Down
	8. Normal Down, 24			
	9. Circulate / Purge Down	20. Circulate / Purge Down	31. Circulate / Purge Down	41. Circulate / Purge Down
	10. Clean, 12	21. Clean, 12	32. Clean	42. Clean
	11. Clean, 24	22. Clean, 24		
	12. Shutdown, 12	23. Shutdown, 12	33. Shutdown, 12	43. Shutdown, 12
	13. Shutdown, 24	24. Shutdown, 24	34. Shutdown, 24	44. Shutdown, 24

Table 4.2 lists alternative names used for state tables and current equivalent.

Table 4.2 Alternative table names

Current Name	Old Names		
Normal Up	Normal Printhead Up	Normal Start-Up	
Normal Down	Normal Printhead Down,	Normal Clean Down	
Circulate / Purge Down	Circulate / Purge Printhead Down	Down	Circulate and Purge
Clean	Clean Printhead Up	Printhead Clean Up	Printhead Clean Start-Up
Shutdown	Remove Printhead	Printhead Shutdown	

Column Names and Abbreviations

Table 4.3 lists the names used in the column headings of the state tables.

Table 4.3 Column headings, abbreviations, and units of measure

Column / Function	Abbreviation	Units of measure (abbreviation)
State	None	On = 1, Off = 0
Fill enable		
Ink Pump		
(positive) Air Pump		
Vacuum Pump	Vac Pump	
Cross flush	None	
Anti-siphon		
Catcher line		
Eyelid Active		
Eyelid Hold		
Catcher Heater Duty voltage		VDC
Eyelid Heater voltage		% VDC
Ink pump voltage minimum	IP Volts min	VDC
Ink pump voltage maximum	IP Volts max	
Current Minimum	Curr min	milliamps (ma)
Current Maximum	Curr max	milliamps (ma)
Servo Pressure	Servo Press	pounds per in^2 (psi)
Pressure minimum	Press min	
Pressure maximum	Press max	
Servo vacuum	Servo vac	inches H_20
Vacuum minimum	Vac min	
Vacuum maximum	Vac max	
Stimulation voltage	Stim Volts	% Tab VAC
Charge voltage	Chg Volts	VDC
Run test	None	Test number
State Time		seconds (sec)
Test Fail		state number
Transfer Down		state number

Test Functions

Table 4.4 lists and describes the tests identified in the state tables.

Table 4.4 Tests, state tables

Number	Name	Function
2	Ink level	Verifies normal ink level. The test passes if the float indicates a normal level. (The switch is open.) If the test fails the number of times specified in the state table, an IJ-5E or IJ-70 (depending on the fill valve that is energized) error occurs
4	Vacuum pump	Verifies the tank vacuum level is above a minimum level. The test passes if the vacuum is above 10 inches (H2O). The test fails if the tank vacuum is below 10 inches (H2O). If the test fails the number of times specified in the state table, an IJ-41 error occurs.
8	Ink temperature	Verifies the printhead temperature is above a minimum level. The test passes if the printhead temperature is above 75 °F (24 °C). If the temperature is below 75 °F (24 °C), the software compares the temperature (after a two minute delay) to the previous reading. If the new reading is more than 1 °F (0.56 °C) higher than the previous reading, the test repeats until the printhead temperature exceeds 75 °F (24 °C). If the new temperature reading is less than 1 °F (0.56 °C) higher than the previous reading (meaning the temperature is rising less than 0.5 °F or 0.28 °C per minute), the test fails. If the text fails the number of times specified in the state table, an IJ-63 error is generated.
16	Vacuum restriction	Verifies the tank vacuum is below a maximum level. The test passes if the tank vacuum is below 5 inches (H2O). The test fails if the vacuum is above 5 inches (H2O). If the test fails the number of times specified in the state table, an IJ-46 error is generated.
64	Set phase	Allows the control software to set the printhead phase to an initial value. No errors can occur.
128	Ink pressure	Verifies pressure is above the minimum level at the printhead pressure transducer. The test passes if the pressure is above 1 psi. The test fails if the pressure is below 1 psi. If the test fails the number of times specified in the state tables, the printer generates an Ink Pressure Low (IJ-50) error code.

5120 State Tables

This section contains state tables for the 5120 printer. These tables apply for the fluid system conditions listed in Table 4.5.

Table 4.5 Operating conditions, 5120

	Minimum	**Maximum**	**Normal**
Tank Ink Temperature	45° F	135° F	115° F
Printhead Ink Temperature	73° F	135° F	85° F
Stim Tab	50%	150%	100%

Each table takes up a full page. Tables begin on the next page.

State Table 1 5120, Normal Up, 12-ft Umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	6
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	0	0	4
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	0	2.5	0	1000
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	140	2.5	220	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	11	0	0	25.5	25.5	25.5	0	0	150	0
6	0	0	0	0	0	0	0	0	150	0	2	0	0	25.5	0	0	0	0	0	11	0	0	25.5	7	0.6	0	250
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	11	0	125	2	60	0
8	0	1	0	0	0	0	0	0	60	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	255	0
9	0	0	0	0	0	0	0	0	255	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	11	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	2	25.5	0	0	0	0	0	11
12	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	1	0	0	0	0	0	10	2	25.5	60	0	0	10
13	0	0	0	0	0	0	0	0	0	0	10	0	0	10	0	0	1	0	0	0	0	0	10	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	10	0	10	0	0	10	0	0	1	0	0	0	0	2	0.4	0	60
15	0	0	0	0	0	0	0	0	0	0	0	25.5	10	0	10	0	0	25.5	0	0	1	25.5	0	0	0.1	40	0
16	1	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	10	0	10	0	0	25.5	0	0	1	0	0	10	2
17	0	0	0	0	0	0	0	0	10	0	25.5	25.5	25.5	25.5	0	25.5	10	0	10	0	0	25.5	0	100	0	0	0
18	1	0	0	0	0	0	0	0	0	0	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	10	0	0	0	0	0	0
19	0	0	0	1	0	0	0	0	0	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	10	10	0	1	100
20	0	0	0	0	0	0	0	1	1	100	0	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	-1	0
21	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	60	0.1	0	50
22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	7	25.5	25.5	25.5	25.5	255	1	10	0
23	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	25.5	25.5	7	25.5	25.5	150	0	100	255
24	0	0	0	0	0	0	0	0	100	0	25.5	0	0	0	0	0	0	0	0	0	25.5	25.5	7	85	1.1	0	255
25	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	0	0	0	0	0	0	0	25.5	60	0.9	105	80
26	0	0	0	0	0	0	0	0	105	0	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	200	0.1	95	85

State Table 2 Normal Up, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	6
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	0	0	4
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	0	2.5	0	1000
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	140	2.5	220	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	11	0	0	25.5	25.5	25.5	0	0	180	0
6	0	0	0	0	0	0	0	0	180	0	2	0	0	25.5	0	0	0	0	0	11	0	0	25.5	7	0.6	0	250
7	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	25.5	0	0	0	0	0	11	0	125	2	60	0
8	0	1	0	0	0	0	0	0	60	0	0	0	10	2	25.5	0	25.5	0	0	0	0	0	0	0	0	255	0
9	0	0	0	0	0	0	0	0	255	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	11	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	25.5	0	0	25.5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	2	25.5	0	0	0	0	0	11
12	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	1	0	0	0	0	0	10	2	25.5	60	0	0	10
13	0	0	0	0	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	0	0	10	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	10	0	10	0	0	10	0	0	1	0	0	0	0	2	0.4	0	60
15	0	0	0	0	0	0	0	0	0	0	0	25.5	10	0	10	0	0	25.5	0	0	1	25.5	0	0	0.1	40	0
16	1	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	10	0	10	0	0	25.5	0	0	1	0	0	10	2
17	0	0	0	0	0	0	0	0	10	0	25.5	25.5	25.5	0	25.5	0	10	0	10	0	0	25.5	0	100	0	0	0
18	1	0	0	0	0	0	0	0	0	0	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	10	0	0	0	0	0	0
19	0	0	0	1	0	0	0	0	0	0	25.5	25.5	7	25.5	7	25.5	25.5	25.5	0	25.5	25.5	0	10	10	0	1	100
20	0	0	0	0	0	0	1	1	1	100	0	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	-1	0
21	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	60	0.1	0	50
22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	7	25.5	25.5	25.5	25.5	255	1	10	0
23	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	25.5	25.5	7	25.5	25.5	180	0	100	255
24	0	0	0	0	0	0	0	0	100	0	25.5	0	0	0	0	0	0	0	0	0	25.5	25.5	7	85	1.1	0	255
25	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	0	0	0	0	0	0	0	25.5	60	0.9	105	120
26	0	0	0	0	0	0	0	0	105	0	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	200	0.1	95	85

State Table 3 Circulate, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	1000	0	10	-1
2	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	0	0	2
3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	0	2.2	0	1010
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	25.5	2	25.5	140	2.5	255	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	25.5	0	0	25.5	25.5	25.5	0	0	150	0
6	0	0	0	0	0	0	0	0	150	0	25.5	0	0	25.5	0	0	0	0	0	0	25.5	0	25.5	7	0.6	0	180
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0.1	2	0
8	0	0	0	0	0	0	0	0	2	0	0	0	10	2	25.5	0	25.5	0	0	0	0	0	0	0	0	10	0
9	0	0	0	0	0	0	0	0	255	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0

State Table 4 Circulate, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	1000	0	10	-1
2	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	0	0	2
3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	0	2.2	0	1010
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	140	2.5	255	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	0	0	25.5	25.5	25.5	25.5	0	0	180	0
6	0	0	0	0	0	0	0	0	180	0	25.5	0	0	25.5	0	0	0	0	0	0	25.5	0	25.5	7	0.6	0	180
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	25.5	0	0	0	0	0	0	0.1	2	0
8	0	0	0	0	0	0	0	0	2	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	10	0
9	0	0	0	0	0	0	0	0	255	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0

State Table 5 Purge, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	0	0	0
3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	0	2.5	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	60	0	255	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	25.5	0	0	0	0	0	0	0	0	10	0	0	250	0
6	0	0	0	0	0	0	0	0	250	0	25.5	0	25.5	0	0	0	0	0	0	0	0	0	25.5	0	2.5	0	60
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0.9	255	0
8	0	0	0	0	0	0	0	0	255	0	0	0	10	2	25.5	0	25.5	0	0	25.5	0	0	0	0	0.8	90	0
9	0	0	0	0	0	0	0	0	90	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2	25.5	0	0	25.5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	10	2	25.5	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	10	2	25.5	60	0	0	0
13	0	0	0	0	0	0	0	0	0	0	25.5	0	0	25.5	0	0	2	0	0	0	0	0	10	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	2	25.5	0	13	2	0	0	0	0	2	0.4	0	60
15	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	25.5	0	0	25.5	0	0	2	0	0	0	0.1	40	0
16	0	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	0	0	25.5	0	0	10	0	0	2	0	0	10	2
17	0	0	0	0	0	0	0	0	10	0	0	0	25.5	25.5	0	25.5	0	0	0	0	0	25.5	0	0	0	0	0

State Table 6 Purge, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	0	0	0
3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	0	2.5	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	60	0	255	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	0	0	0	0	0	10	0	0	250	0
6	0	0	0	0	0	0	0	0	250	0	25.5	0	0	25.5	0	0	0	0	0	0	0	0	25.5	0	2.5	0	60
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0.9	255	0
8	0	0	0	0	0	0	0	0	255	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0.8	90	0
9	0	0	0	0	0	0	0	0	90	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	10	2	25.5	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	10	2	25.5	60	0	0	0
13	0	0	0	0	0	0	0	0	0	0	25.5	0	0	25.5	0	0	2	0	0	0	0	0	10	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	2	25.5	0	13	2	0	0	0	0	2	0.4	0	60
15	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	25.5	0	0	25.5	0	0	2	0	0	0	0.1	40	0
16	0	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	0	0	25.5	0	0	10	0	0	2	0	0	10	2
17	0	0	0	0	0	0	0	0	10	0	0	0	25.5	25.5	0	25.5	0	0	0	0	0	25.5	0	0	0	0	0

State Table 7 Normal Down, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	1	1	1	0	1	0	0	0	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	0.2	1	1
1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	10	0	800	-1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	0	1	0
3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	2.5	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	255	2.5	255	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	25.5	0	0	0	0	0	0	0	0	25.5	0	0	250	0
6	0	0	0	0	0	0	0	0	50	0	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0	0	2.5	0	255
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	2.5	255	0

State Table 8 Normal Down, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	1	1	1	0	1	0	0	0	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	0.2	1	1
1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	10	0	800	-1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	0	1	0
3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	0	2.5	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	255	2.5	255	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	0	0	0	0	0	25.5	0	0	250	0
6	0	0	0	0	0	0	0	0	50	0	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0	0	2.5	0	255
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	2.5	255	0

State Table 9 Circulate / Purge Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	15	1	1
1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	500	-1
2	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	0	2.5	0	0

State Table 10 Clean, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	6
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	0	0	4
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	0	2.5	0	1000
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	140	2.5	220	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	11	0	25.5	25.5	25.5	25.5	0	0	150	0
6	0	0	0	0	0	0	0	0	150	0	2	0	0	25.5	0	0	0	0	0	11	0	0	25.5	7	0.6	0	250
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	11	0	125	2	60	0
8	0	1	0	0	0	0	0	0	60	0	0	0	10	2	25.5	0	25.5	0	0	0	0	0	0	0	0	255	0
9	0	0	0	0	0	0	0	0	55	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	11	0	50	35
10	0	0	0	0	0	0	0	0	50	0	3	0	0	0	0	0	10	0	2	0	0	25.5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	15	0	2	0	0	0	0	0	11
12	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	3	0	0	0	0	0	15	0	2	60	0	0	0
13	0	0	0	0	0	0	0	0	0	0	10	0	0	10	0	0	3	0	0	0	0	0	15	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	25.5	0	0	3	0	0	0	0	2	0.4	0	60
15	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	10	1	0	25.5	0	0	3	0	0	0	0.1	40	0
16	0	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	25.5	0	10	1	0	25.5	0	0	1	0	0	10	2
17	0	0	0	0	0	0	0	0	10	0	25.5	20	25.5	25.5	0	25.5	25.5	0	10	0	0	25.5	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	25.5	6	0	25.5	25.5	0	25.5	0	0	10	1	0	8	0	0	0
19	0	0	0	0	0	0	0	0	0	0	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	10	500	0	3	0
20	0	0	0	0	0	0	0	1	3	100	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	1	0	-1	0
21	0	0	0	0	0	0	0	0	-1	0	11	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	0	0.1	0	900
22	1	0	0	0	0	0	0	0	0	0	0	0	11	0	0	25.5	25.5	25.5	0	25.5	0	0	25.5	255	0	10	0
23	0	0	0	0	0	0	0	0	10	0	0	0	0	0	11	0	0	25.5	25.5	25.5	7	25.5	0	150	0	0	0
24	0	0	0	0	0	0	0	0	0	0	25.5	0	0	0	0	0	11	0	0	25.5	25.5	25.5	7	0	2.5	0	255
25	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	0	0	0	11	0	0	0	0	60	0.1	200	150
26	0	0	0	0	0	0	0	0	250	0	2	25.5	0	25.5	0	0	25.5	0	0	0	0	0	11	255	0	95	20
27	0	0	0	0	0	0	0	0	6	0	0	10	2	25.5	0	25.5	0	0	0	0	10	0	11	0	0	0	60
28	0	0	0	0	1	0	1	0	2	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	35	55
29	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	10	0	2	0	0	25.5	0	0	0	0.1	0	50
30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	15	0	2	0	0	25.5	0	0	11	0

State Table 10 (Continued)

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
31	0	0	0	0	0	0	0	0	11	0	25.5	0	0	3	0	0	0	0	0	15	0	2	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	3	0	0	0	0	0	15	0	0	0.6	0	0
33	0	0	0	0	0	0	0	0	0	0	0	10	0	0	25.5	0	0	3	0	0	0	0	0	40	0	60	0
34	0	0	0	0	0	0	0	0	60	0	25.5	0	0	10	1	0	25.5	0	0	3	0	0	0	10	0	0	0
35	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	10	1	0	25.5	0	0	1	0	0	0	2	40
36	0	0	0	0	0	0	0	0	2	0	20	25.5	25.5	0	25.5	25.5	0	10	0	0	25.5	0	0	0	0	0	10
37	0	1	0	0	0	0	0	0	0	0	25.5	6	0	25.5	25.5	0	25.5	0	0	10	1	0	25.5	1	0	0	0
38	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	10	1	-1	0	0	0
39	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	3
40	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	0	25.5	0	0	25.5	25.5	0	25.5	10	0	10	-1
41	0	0	0	0	0	0	0	0	40	0	0	11	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	0	0	0
42	0	0	0	0	0	0	0	0	1	0	0	0	0	11	0	0	25.5	25.5	25.5	7	25.5	0	0	0	2.5	0	10
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	25.5	0	25.5	200	1.5	255	0
44	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	11	0	0	0	0	25.5	6	0	150	0
45	0	0	0	0	0	0	0	0	150	0	25.5	0	0	25.5	0	0	0	0	0	11	0	0	0	7	0.6	0	200
46	0	0	0	0	0	0	0	0	20	0	10	2	25.5	0	0	25.5	0	0	0	0	0	11	0	0	2.5	255	95
47	0	1	0	0	0	0	0	0	255	0	0	0	10	2	25.5	0	0	25.5	0	0	0	10	0	0	0	255	7
48	0	0	0	0	0	0	0	0	200	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	11	0	0	0
49	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	2	25.5	0	0	25.5	0	10	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	1	25.5	0	0	0	0	10	2	25.5	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	1	25.5	0	0	0	0	10	2	25.5	60	0	0	0
52	0	0	0	0	0	0	0	0	0	0	10	0	0	25.5	0	0	1	25.5	0	0	0	0	10	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	25.5	0	10	0	0	25.5	0	0	1	25.5	0	0	0	2	0.4	0	60
54	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	0	10	0	0	10	0	0	1	25.5	0	0	0.1	40	0
55	0	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	25.5	0	10	0	0	25.5	0	0	1	0	0	10	2
56	0	0	0	0	0	0	0	0	10	0	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	10	0	0	25.5	0	63	0	0	0
57	0	0	0	0	0	0	0	0	0	0	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	10	0	0	0	0	0	0

State Table 11 Clean, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	6
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	0	0	4
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	0	2.5	0	1000
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	140	2.5	220	0
5	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	11	0	0	25.5	25.5	25.5	0	0	180	0
6	0	0	0	0	0	0	0	0	180	0	2	0	0	25.5	0	0	0	0	0	11	0	0	25.5	7	0.6	0	250
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	11	0	125	2	60	0
8	0	1	0	0	0	0	0	0	60	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	255	0
9	0	0	0	0	0	0	0	0	55	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	11	0	50	35
10	0	0	0	0	0	0	0	0	50	0	3	0	0	0	0	0	10	0	2	0	0	25.5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	15	0	2	0	0	0	0	0	11
12	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	3	0	0	0	0	0	15	0	2	60	0	0	0
13	0	0	0	0	0	0	0	0	0	0	10	0	0	10	0	0	3	0	0	0	0	0	15	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	25.5	0	0	3	0	0	0	0	2	0.4	0	60
15	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	10	1	0	25.5	0	0	3	0	0	0	0.1	40	0
16	0	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	25.5	0	10	1	0	25.5	0	0	1	0	0	10	2
17	0	0	0	0	0	0	0	0	10	0	25.5	20	25.5	25.5	0	25.5	25.5	0	10	0	0	25.5	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	25.5	6	0	25.5	25.5	0	25.5	0	0	10	1	0	8	0	0	0
19	0	0	0	0	0	0	0	0	0	0	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	10	500	0	3	0
20	0	0	0	0	0	0	1	100	3	0	25.5	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	1	0	-1	0
21	0	0	0	0	0	0	0	0	-1	0	11	0	0	25.5	25.5	25.5	25.5	25.5	0	0	25.5	25.5	0	0	0.1	0	900
22	1	0	0	0	0	0	0	0	0	0	0	0	11	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	255	0	10	0
23	0	0	0	0	0	0	0	0	10	0	0	0	0	0	11	0	0	25.5	25.5	25.5	7	25.5	0	180	0	0	0
24	0	0	0	0	0	0	0	0	0	0	25.5	0	0	0	0	0	11	0	0	25.5	25.5	25.5	7	0	2.5	0	255
25	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	0	0	0	11	0	0	0	0	60	0.1	200	180
26	0	0	0	0	0	0	0	0	250	0	2	25.5	0	0	25.5	0	0	0	0	0	11	0	0	255	0	95	20
27	0	0	0	0	0	0	0	0	6	0	0	10	2	25.5	0	0	25.5	0	0	0	10	0	11	0	0	0	60

State Table 11 (Continued)

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
28	0	0	0	0	1	0	1	0	2	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	35	55
29	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	10	0	2	0	0	25.5	0	0	0	0.1	0	50
30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	15	0	2	0	0	25.5	0	0	11	0
31	0	0	0	0	0	0	0	0	11	0	25.5	0	0	3	0	0	0	0	0	15	0	2	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	3	0	0	0	0	0	15	0	0	0.6	0	0
33	0	0	0	0	0	0	0	0	0	0	0	10	0	0	25.5	0	0	3	0	0	0	0	0	40	0	60	0
34	0	0	0	0	0	0	0	0	60	0	25.5	0	0	10	1	0	25.5	0	0	3	0	0	0	10	0	0	0
35	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	10	1	0	25.5	0	0	1	0	0	0	2	40
36	0	0	0	0	0	0	0	0	2	0	20	25.5	25.5	0	25.5	25.5	0	10	0	0	25.5	0	0	0	0	0	10
37	0	1	0	0	0	0	0	0	0	0	25.5	6	0	25.5	25.5	0	25.5	0	0	10	1	0	25.5	1	0	0	0
38	0	0	0	0	0	0	0	0	0	0	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	10	1	-1	0	0	0
39	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	3
40	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	25.5	25.5	2	25.5	0	25.5	25.5	25.5	0	25.5	10	0	10	-1
41	0	0	0	0	0	0	0	0	40	0	0	11	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	0	0	0
42	0	0	0	0	0	0	0	0	1	0	0	0	0	11	0	0	25.5	25.5	25.5	7	25.5	0	0	0	2.5	0	10
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	25.5	0	25.5	200	1.8	255	0
44	0	0	0	0	0	0	0	0	255	0	0	25.5	0	0	0	0	0	11	0	0	0	0	25.5	6	0	180	0
45	0	0	0	0	0	0	0	0	180	0	25.5	0	0	25.5	0	0	0	0	0	11	0	0	0	7	0.6	0	200
46	0	0	0	0	0	0	0	0	20	0	10	2	25.5	0	0	25.5	0	0	0	0	0	11	0	0	2.5	255	95
47	0	1	0	0	0	0	0	0	255	0	0	0	10	2	25.5	0	0	25.5	0	0	0	10	0	0	0	255	7
48	0	0	0	0	0	0	0	0	200	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	11	0	0	0
49	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	2	25.5	0	0	25.5	0	10	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	1	25.5	0	0	0	0	10	2	25.5	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	1	25.5	0	0	0	0	10	2	25.5	60	0	0	0
52	0	0	0	0	0	0	0	0	0	0	10	0	0	25.5	0	0	1	25.5	0	0	0	0	10	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	25.5	0	10	0	0	25.5	0	0	1	25.5	0	0	0	2	0.4	0	60
54	0	0	0	0	0	0	0	0	0	0	0	25.5	25.5	0	10	0	0	10	0	0	1	25.5	0	0	0.1	40	0
55	0	0	0	0	0	0	0	0	40	0	25.5	25.5	0	25.5	25.5	0	10	0	0	25.5	0	0	1	0	0	10	2
56	0	0	0	0	0	0	0	0	10	0	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	10	0	0	25.5	0	63	0	0	0
57	0	0	0	0	0	0	0	0	0	0	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	10	0	0	0	0	0	0

State Table 12 Shutdown, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	3
1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	1500	0	0	0	0	0	0	0	25.5	0	25.5	0	25.5	25.5	25.5	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	0	2.5	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	255	1.2	255	0
5	0	0	0	0	0	0	0	0	255	0	25.5	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	120	0
6	0	0	0	0	0	0	0	0	120	0	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0	0	2.5	0	255
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	2.5	255	0
8	0	0	0	0	0	0	0	0	255	0	0	0	10	2	25.5	0	25.5	0	0	0	0	0	0	0	0	255	0
9	0	0	0	0	0	0	0	0	255	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0

State Table 13 Shutdown, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	3
1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	10	-1
2	0	0	0	0	0	0	0	0	1500	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	0	2.5	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	255	1.2	255	0
5	0	0	0	0	0	0	0	0	255	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	0	120	0
6	0	0	0	0	0	0	0	0	120	0	25.5	0	0	25.5	0	0	0	0	0	0	0	0	0	0	2.5	0	255
7	0	0	0	0	0	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0	0	2.5	255	0
8	0	0	0	0	0	0	0	0	255	0	0	0	10	2	25.5	0	25.5	0	0	0	0	0	0	0	0	255	0
9	0	0	0	0	0	0	0	0	255	0	0	0	0	0	10	2	25.5	0	0	25.5	0	0	0	0	0	0	0

Early 5240 State Tables

This section contains state tables for the early 5240 printer (serial numbers lower than 2041998xxxx040**3000**). These tables apply for the fluid system conditions listed in Table 4.6.

Table 4.6 Operating conditions, early 5240

	Minimum	Maximum	Normal
Tank Ink Temperature	45° F	135° F	115° F
Printhead Ink Temperature	73° F	135° F	85° F
Stim Tab	50%	150%	100%

Each table takes up a full page. Tables begin on the next page.

State Table 14 5240 early, Normal Up, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	8	2
9	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
12	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
13	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	13	2
14	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
15	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
16	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
18	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
19	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
20	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
21	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
22	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
23	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
24	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
25	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
26	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	25	1
27	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
28	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
29	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
30	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
31	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
32	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
33	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.5	0	0
34	1	1	1	1	0	1	1	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	0
35	1	1	1	1	0	1	0	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0	0	0

State Table 15 Normal Up, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Trans fer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	8	2
9	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
12	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
13	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	13	2
14	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
15	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
16	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
18	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
19	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
20	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
21	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
22	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
23	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
24	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
25	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
26	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	25	1
27	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
28	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
29	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
30	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
31	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
32	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
33	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.5	0	0
34	1	1	1	1	0	1	1	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	0
35	1	1	1	1	0	1	0	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0	0	0

State Table 15 (Continued) Normal Up, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	6	0
9	1	1	1	1	1	1	0	0	0	0	0	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	2	0	0	25.5	25.5	0	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	5	0	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 16 Clean, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	6	0
9	1	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	2	0	0	25.5	25.5	0	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	5	0	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 17 Clean, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	6	0
9	1	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	2	0	0	25.5	25.5	0	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	5	0	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 18 Purge

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
2	0	0	1	1	0	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
3	0	0	1	1	1	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
4	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	6	0	2
6	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
8	1	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	2	8	6	2
9	1	1	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
10	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
11	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0	0	2
12	1	0	1	1	0	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	6	0	2
13	1	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	2	10	13	2
14	1	1	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
15	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
16	0	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	0	2
17	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2

State Table 19 Normal Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	1	1	1	0	1	0	0	20	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	1	1
1	0	1	1	1	0	1	0	0	20	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	0.2	2	2
2	0	1	1	1	0	1	0	0	20	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	10	0	0	0.5	3	3
3	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	0	4	4
4	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	0.5	5	5
5	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	0.1	6	6
6	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	25	7	7
7	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	5	0	25.5	0	0	0	1	8	8
8	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	0	0	25.5	0	0	0	0.1	8	8

State Table 20 Circulate / Purge Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	1	1
1	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	5	2	2
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	3	3
3	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	3	3

State Table 21 Clean, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
9	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
12	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
13	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
14	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
15	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
16	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
18	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
19	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
20	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
21	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
22	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
23	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
24	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	5	0	4
25	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
26	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
27	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.4	0	4

State Table 21 (Continued) Clean, 12-ft umbilical

Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	29	2
0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	8	0	2
0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	34	2
0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	46	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1

State Table 22 Clean, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	25.5	25.5	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
9	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
12	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
13	0	1	1	1	1	1	0	0	0	0	0	25.5	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
14	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
15	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
16	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	5	0	2
18	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
19	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
20	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
21	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
22	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
23	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
24	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	5	0	4
25	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
26	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
27	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.4	0	4

State Table 22 (Continued) Clean, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
28	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
29	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	29	2
30	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	8	0	2
31	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
32	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
33	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
34	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	34	2
35	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
36	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
37	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
38	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
39	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
40	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
41	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
42	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
43	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
44	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	2.5	0	2
45	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
46	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
47	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	46	1
48	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
49	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
50	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
51	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
52	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
53	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
54	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1

State Table 23 Shutdown, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	7
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
3	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
4	0	0	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
5	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
6	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
7	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
8	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
9	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	7
10	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	7
11	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	0	7
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	7

State Table 24 Shutdown, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	7
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
3	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
4	0	0	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
5	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
6	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
7	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
8	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
9	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
10	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	60	0	7
11	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	0	7
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	7

Current 5240 State Tables

This section contains state tables for the current 5240 printer. These tables apply to printers with serial number 2041998xxxx040**3000** and higher. The current 5240 has three new controls designated by the following numbers in the state tables:

1. Catcher line
2. Air ingest valve
3. Ink condensation heater

These tables apply for the fluid system conditions listed in Table 4.7.

Table 4.7 Operating conditions, current 5240

	Minimum	Maximum	Normal
Tank Ink Temperature	45° F	135° F	115° F
Printhead Ink Temperature	73° F	135° F	85° F
Stim Tab	50%	150%	100%

Each table takes up a full page. Tables begin on the next page.

State Table 25 5240 current, Normal Up, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Slum Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Tranfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	0	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	8	2
9	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
12	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
13	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	13	2
14	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
15	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
16	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
18	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
19	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
20	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
21	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
22	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
23	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
24	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
25	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
26	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	25	1
27	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
28	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
29	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
30	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
31	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
32	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
33	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.5	0	0
34	1	1	1	1	0	1	1	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	0
35	1	1	1	1	0	1	0	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0	0	0

State Table 26 Normal Up, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	8	2
9	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	15	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
12	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
13	0	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	13	2
14	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
15	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
16	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
18	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
19	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
20	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
21	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
22	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
23	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
24	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
25	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
26	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	25	1
27	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
28	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
29	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
30	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
31	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
32	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
33	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.5	0	0
34	1	1	1	1	0	1	1	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	0
35	1	1	1	1	0	1	0	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0	0	0

State Table 27 Circulate, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	6	0
9	1	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	2	0	0	25.5	25.5	0	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	5	0	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 28 Circulate, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	6	0
9	1	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	2	0	0	25.5	25.5	0	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	5	0	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 29 Purge

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
2	0	0	1	1	0	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
3	0	0	1	1	1	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
4	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	6	0	2
6	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
8	1	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	2	8	6	2
9	1	1	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
10	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
11	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0	0	2
12	1	0	1	1	0	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	6	0	2
13	1	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	2	10	13	2
14	1	1	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
15	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
16	0	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	0	2
17	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2

State Table 30 Normal Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	1	1	1	0	1	0	0	20	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	1	1
1	0	1	1	1	0	1	0	0	20	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	0.2	2	2
2	0	1	1	1	0	1	0	0	20	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	10	0	0	0.5	3	3
3	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	0	4	4
4	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	25.5	25.5	25.5	0	25.5	0	0	0	0.5	5	5
5	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	6	6
6	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	25	7	7
7	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	8	8
8	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	8	8

State Table 31 Circulate / Purge Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	1	1
1	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	5	2	2
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	3	3
3	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	3	3

State Table 32 Clean

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
9	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
12	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
13	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
14	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
15	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
16	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
18	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
19	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	2
20	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
21	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	0	2
22	0	1	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	5	0	2
23	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	0	5	8	2
24	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	5	0	4
25	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
26	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
27	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.4	0	4

State Table 32 (Continued) Clean

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
28	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
29	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	29	2
30	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	8	0	2
31	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
32	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
33	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	0	2
34	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	34	2
35	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
36	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
37	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
38	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
39	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
40	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
41	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
42	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
43	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
44	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
45	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
46	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
47	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	46	1
48	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
49	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
50	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
51	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
52	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
53	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
54	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1

State Table 33 Shutdown, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	7
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
3	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
4	0	0	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
5	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
6	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
7	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
8	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
9	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	7
10	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	7
11	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	0	7
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	7

State Table 34 Shutdown, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	7
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
3	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
4	0	0	1	1	0	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
5	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
6	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
7	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
8	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
9	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
10	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	60	0	7
11	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	5	0	25.5	0	0	0	1	0	7
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	7

5122 State Tables

This section contains state tables for the 5122 printer. These tables apply for the fluid system conditions listed in Table 4.8.

Table 4.8 Operating conditions, 5122

	Minimum	Maximum	Normal
Tank Ink Temperature	45° F	135° F	115° F
Printhead Ink Temperature	73° F	135° F	85° F
Stim Tab	50%	150%	100%

Each table takes up a full page. Tables begin on the next page.

State Table 35 5122, Normal Up, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	10	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	10	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	0	0	25.5	25.5	15	25.5	0	0	128	7	4	4
7	0	1	1	1	1	1	0	0	0	0	0	0	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	3	0	4
8	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	10	8	2
9	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	8	5	9	2
10	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	5	0	2
11	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	0.1	8	2
12	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	0.1	8	2
13	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	8	1	13	2
14	0	1	1	1	0	1	0	0	0	0	0	5	25.5	2	25.5	25.5	0	25.5	25.5	15	25.5	10	0	0	5	0	2
15	0	1	1	1	0	1	0	0	0	0	0	5	25.5	2	25.5	25.5	0	25.5	25.5	15	25.5	10	0	0	30	0	2
16	0	1	1	1	0	1	0	0	0	0	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	10	0	0	0.1	0	2
17	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	10	0	0	40	0	2
18	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	25.5	0	0	10	0	2
19	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	25.5	0	0	1	0	2
20	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	25.5	0	0	1	0	2
21	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	15	25.5	25.5	0	0	4	0	2
22	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	15	25.5	25.5	25.5	0	0.5	0	2
23	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	4	0	2
24	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
25	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
26	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	64	5	25	1
27	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
28	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
29	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
30	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
31	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
32	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
33	1	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	0
34	1	1	1	1	0	1	1	1	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	0
35	1	1	1	1	0	1	0	1	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0	0	0

State Table 36 Normal Up, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	128	0.6	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	7	25.5	0	0	25.5	25.5	0	25.5	0	0	0	1	0	4
8	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	30	8	2
9	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	25.5	0	0	15	0	2
10	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	7	25.5	0	5	25.5	25.5	0	25.5	0	0	0	60	0	2
11	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
12	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	1.5	8	2
13	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	15	0	25.5	25.5	0	25.5	0	0	8	20	13	2
14	0	1	1	1	0	1	0	0	0	0	25.5	0	25.5	7	25.5	0	0	25.5	25.5	0	25.5	25.5	0	0	0.2	0	2
15	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	4	0	2
16	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	25.5	20	25.5	25.5	0	25.5	25.5	0	0	1.5	0	2
17	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
18	0	1	1	1	0	1	0	0	0	0	0	0	25.5	2	25.5	25.5	20	25.5	25.5	0	25.5	25	0	0	40	0	2
19	0	1	1	1	0	1	0	0	20	100	0	0	25.5	2	25.5	25.5	20	25.5	25.5	25.5	25.5	25	0	0	20	0	2
20	0	1	1	1	0	1	0	0	100	100	0	0	25.5	2	25.5	25.5	25.5	25.5	25.5	0	25.5	25	0	0	40	0	2
21	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	0	0	4	0	2
22	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.1	0	2
23	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	2.5	0	2
24	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
25	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
26	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	64	5	25	1
27	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	5	0	1
28	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
29	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
30	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
31	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
32	0	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	120	0	1
33	1	1	1	1	0	1	0	0	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.5	0	0
34	1	1	1	1	0	1	1	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	0
35	1	1	1	1	0	1	0	1	100	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0	0	0

State Table 37 Circulate, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Xfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	10	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	10	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	10	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	128	5	6	0
9	1	1	1	1	1	1	0	0	0	0	0	20	25.5	2	25.5	13	0	25.5	25.5	25.5	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	4	25.5	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 38 Circulate, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	2
1	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	2
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	2	2
3	1	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	0.1	3	2
4	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	4	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	1	5	2
6	1	1	1	1	0	0	0	0	0	0	25.5	10	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	10	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	1
8	1	1	1	1	0	1	0	0	0	0	25.5	10	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	128	5	6	0
9	1	1	1	1	1	1	0	0	0	0	0	20	25.5	2	25.5	13	0	25.5	25.5	25.5	25.5	0	0	0	1	0	0
10	1	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	15	0	1
11	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	4	25.5	25.5	0	0	0	1	0	2
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	3

State Table 39 Purge

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
2	0	0	1	1	0	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
3	0	0	1	1	1	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	2
4	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2
5	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	6	0	2
6	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	20	25.5	0	0	0	2	0	2
7	1	1	1	1	0	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	2
8	1	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	2	8	6	2
9	1	1	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	1.5	0	2
10	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	0.1	0	2
11	0	0	0	0	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0	0	2
12	1	0	1	1	0	1	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	6	0	2
13	1	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	2	10	13	2
14	1	1	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	1.5	0	2
15	1	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	25.5	25.5	25.5	0	0	0	0.1	0	2
16	0	0	1	1	0	0	0	0	0	0	0	0	10	0	25.5	0	0	25.5	4	0	25.5	0	0	0	1	0	2
17	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	2

State Table 40 Normal Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	1	1	1	1	0	1	0	0	20	100	0	25.5	25.5	7	25.5	25.5	25.5	25.5	25.5	0	25.5	25.5	25.5	0	0.5	1	1
1	0	1	1	1	0	1	0	0	20	100	0	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	25.5	0	0	0.2	2	2
2	0	1	1	1	0	1	0	0	20	100	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	10	0	0	0.5	3	3
3	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	0	4	4
4	0	1	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	25.5	0	25.5	25.5	0	25.5	0	0	0	5	5	5
5	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	60	6	6
6	0	0	1	1	1	0	0	0	0	100	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	60	7	7
7	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	4	0	25.5	0	0	0	3	8	8
8	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	8	8

State Table 41 Circulate / Purge Down

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	1	1	1	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	15	1	1
1	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	5	2	2
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	4	0	25.5	0	0	0	1	3	3
3	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	3	3

State Table 42 Clean

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	16	5.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	0	0.1	0	7
2	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	4	0.1	2	7
3	1	0	1	1	0	0	0	0	0	0	0	0	10	0	2	0	0	25.5	25.5	0	25.5	0	0	2	0.8	3	7
4	0	1	1	1	0	0	0	0	0	0	25.5	20	25.5	2	25.5	0	0	25.5	25.5	0	25.5	0	0	0	8	0	4
5	0	1	1	1	0	1	0	0	0	0	25.5	25	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	4
6	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	0	0	25.5	25.5	15	25.5	0	0	0	2	4	4
7	0	1	1	1	1	1	0	0	0	0	25.5	0	25.5	0	25.5	0	0	25.5	25.5	15	25.5	0	0	0	1	0	4
8	1	1	1	1	1	1	0	0	0	0	0	0	25.5	2	25.5	13	0	25.5	25.5	15	25.5	0	0	0	10	8	2
9	0	1	1	1	1	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	1	0	4
10	0	1	1	1	1	0	0	0	0	0	0	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	25.5	0	0	5	0	4
11	0	1	1	1	0	0	0	0	0	0	25.5	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	8	0	4
12	0	1	1	1	0	1	0	0	0	0	25.5	25	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	4
13	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	0	0	25.5	25.5	15	25.5	0	0	128	4	11	4
14	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	6	0	4
15	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	19	25.5	25.5	0	0	5	8	2
16	0	1	1	1	0	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	25.5	0	0	5	0	4
17	1	1	1	1	1	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	5	8	2
18	0	1	1	1	1	1	0	0	0	0	25.5	25	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	1	0	4
19	0	1	1	1	1	0	0	0	0	0	0	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	25.5	0	0	1	0	4
20	0	1	1	1	0	0	0	0	0	0	25.5	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	2	0	4
21	0	1	1	1	0	1	0	0	0	0	25.5	25	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	4
22	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	0	0	25.5	25.5	15	25.5	0	0	0	2	20	4
23	0	1	1	1	1	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	6	0	4
24	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	15	25.5	25.5	0	0	5	8	2
25	0	1	1	1	0	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	25.5	0	0	5	0	4
26	1	1	1	1	1	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	5	8	2
27	0	1	1	1	1	1	0	0	0	0	25.5	25	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	1	0	4
28	0	1	1	1	1	0	0	0	0	0	0	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	25.5	0	0	1	0	4
29	0	1	1	1	0	0	0	0	0	0	25.5	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	2	0	4
30	0	1	1	1	0	1	0	0	0	0	25.5	25	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	4

State Table 42 (Continued) Clean

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
31	0	1	1	1	0	1	0	0	0	0	0	0	25.5	7	25.5	0	0	25.5	25.5	15	25.5	0	0	0	2	29	4
32	0	1	1	1	1	1	0	0	0	0	25.5	25.5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	6	0	4
33	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	15	25.5	25.5	0	0	5	8	2
34	0	1	1	1	0	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	25.5	0	0	5	0	4
35	1	1	1	1	1	1	0	0	0	0	25.5	5	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	1	8	2
36	0	1	1	1	1	1	0	0	0	0	25.5	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	1	0	4
37	0	1	1	1	0	0	0	0	0	0	0	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	2	0	4
38	0	1	1	1	0	1	0	0	0	0	25.5	20	25.5	2	25.5	0	0	25.5	25.5	15	25.5	0	0	0	0.1	0	4
39	0	1	1	1	0	1	0	0	0	0	0	5	25.5	7	25.5	0	0	25.5	25.5	15	25.5	0	0	128	4	37	4
40	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	15	25.5	25.5	0	0	1	0	4
41	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	15	25.5	25.5	0	0	10	8	2
42	1	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	15	25.5	25.5	0	8	5	9	2
43	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	8	0	25.5	25.5	15	25.5	25.5	0	0	5	0	2
44	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	0.1	8	2
45	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	10	0	25.5	25.5	15	25.5	25.5	0	0	0.1	8	2
46	0	1	1	1	1	1	0	0	0	0	0	5	25.5	2	25.5	6	0	25.5	25.5	15	25.5	25.5	0	8	1	13	2
47	0	1	1	1	0	1	0	0	0	0	0	5	25.5	2	25.5	25.5	0	25.5	25.5	15	25.5	10	0	0	35	0	2
48	0	1	1	1	0	1	0	0	0	0	0	5	25.5	2	25.5	25.5	0	25.5	25.5	15	25.5	10	0	0	0.1	0	2
49	0	1	1	1	0	1	0	0	0	0	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	10	0	0	0.1	0	2
50	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	10	0	0	40	0	2
51	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	25.5	0	0	10	0	2
52	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	25.5	0	0	1	0	2
53	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	20	25.5	25.5	15	25.5	25.5	0	0	1	0	2
54	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	15	25.5	25.5	0	0	4	0	2
55	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	15	25.5	25.5	25.5	0	0.5	0	2
56	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	4	0	2
57	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
58	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
59	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	64	5	25	1
60	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	1
61	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	4	0	1
62	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
63	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
64	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
65	0	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	0.1	0	1
66	1	1	1	1	0	1	0	0	100	100	0	5	25.5	2	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	0	5	0	0

State Table 43 Shutdown, 12-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	7
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
3	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
4	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
5	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
6	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
7	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
8	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
9	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
10	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	60	0	7
11	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	4	0	25.5	0	0	0	1	0	7
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	7

State Table 44 Shutdown, 24-ft umbilical

State	Fill Enable	Ink Pump	Air Pump	Vac Pump	Cross Flush	Anti Siphon	Eyelid Active	Eyelid Hold	Catcher Heater Duty	Eyelid Heater %	IP Volts	IP Volts Min	IP Volts Max	Curr Min ma	Curr Max ma	Servo Press psi	Press Min psi	Press Max psi	Servo Vac H2O	Vac Min H2O	Vac Max H2O	Stim Volts %Tab	Chg Volts	Run Test	State Time sec	Test Fail	Transfer Down
0	0	0	1	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	16	0.1	0	7
1	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	4	0.1	1	7
2	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
3	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
4	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
5	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	2	0	7
6	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
7	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
8	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
9	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	120	0	7
10	0	0	1	1	1	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	25.5	0	25.5	0	0	0	60	0	7
11	0	0	1	1	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	4	0	25.5	0	0	0	1	0	7
12	0	0	0	0	0	0	0	0	0	0	0	0	25.5	0	25.5	0	0	25.5	0	0	25.5	0	0	0	0.1	0	7

Chapter 5. Removal Procedures

This chapter describes how to replace a failed printer or controller component. Each component described is a Field Replaceable Unit (FRU) or consumable. Removal procedures are divided into the following groups:

- General procedures
- Base plate and electronics
- Data system components
- Fluid system components
- Printhead components
- System components.

Within each section, procedures are arranged alphabetically by FRU name. A table at the beginning of each section lists FRUs by number and gives the procedure names (sub-section titles).

General Procedures

The following introductory information and preparatory procedures precede removals.

Introductory Information

Review the guidelines and tools and consumables inventory before starting a removal procedure.

Service Guidelines

Apply the following guidelines to all procedures:

- Refer to the appendices and other manuals for addition information when so instructed.
- Read a procedure through completely before starting it.
- After any replacement procedure, test the printer by powering it on and checking that the power indicator stays lit.

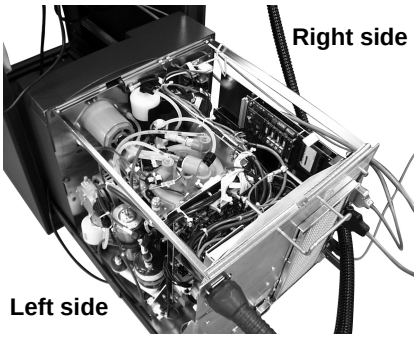
⚠ **WARNING**
If power is required to test a board or other internal component, take all the safety precautions described in the specific procedure. Never touch any component except those specifically identified in the procedure. Test points should only be touched with a multi-meter probe or other appropriate tool.

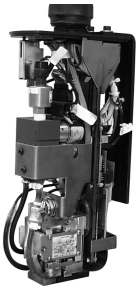
- Circuit board handling precautions
  When removing or replacing printed circuit boards (PCBs), wear a static wrist strap when handling any board as a precaution to protect the board from damage by electrostatic discharge (ESD). Place a removed board on an anti-static work surface.
- Connector pin precautions
  When connecting or disconnected cables, gently pull straight without bending or twisting the connector to avoid bending or breaking pins and make sure that all pins are properly aligned before seating a cable or connector.
- If the replacement procedure for a FRU is simply the reverse of the removal procedure, that is stated. The replacement procedure is detailed only if it requires unique steps or otherwise varies significantly from a reversal than the removal procedure.

Product specific procedure

- Unless marked by a marginal heading (see left), a procedure applies to all 5000 series printers and printing systems.

- For all procedures in this guide, LEFT and RIGHT refer to the printer as viewed from the back, and the printhead as viewed from the front (see below).




Right side view

Tools and Consumables

Repair of a 5000 series printer or controller requires a standard FE tools kit for the 5000 series (0177490) and some or all of the consumables listed in Table 5.1. There are no procedures for these consumables.

Table 5.1 Consumables used with FE tools

Part Number	Description
0101070-055	TUBING-FLEX.170/.250 POLYETHYLENE VLD
0101070-018	TUBING-FLEX.125/.250 SILICONE 50A
0101070-026	TUBING-FLEX.375/.625 SILICONE 50A
0110251	CONS-ADH 3M CA-8
0110261	CONS-HANDCLNR DYE
0178600	FILTERS KIT
0178605	FITTINGS KIT (see “Drain and Flush Procedures”)
0180555	FOAM SWAB (QTY 100) PKGD
SB75219	TAPE-REFLECTIVE

Preparatory Procedures

Some or all of these procedures must be done before certain removal procedures.

- Power shutoff
- Printer removal
- Cover removal
- Support bracket positioning
- Fluid chassis removal
- Flush procedure.

Refer to the specific replacement procedure introduction to determine which general procedures are required.

Power Shutoff

Before removing the printer cover, or beginning any removal or replacement procedure, check that power to the printer is turned off. If the printer is still powered on, use the following procedure to shut off power:

1. Turn power off to the printer.
2. Unplug plug the power cord from the input power source.

Note: If power is required to perform the a procedure, take all the safety precautions described in that procedure.

3. Extend the stabilizer, if necessary (see “Printer Removal”).
4. Remove the printer cover (see “Cover Removal”).
5. Put the data system support bracket in the maintenance position (see “Support Bracket Positioning”).
6. Secure the umbilical so that it will not interfere with access to the printer.
7. If you have not already done so, read the “Service Guidelines” at the beginning of this section.

Printer Removal

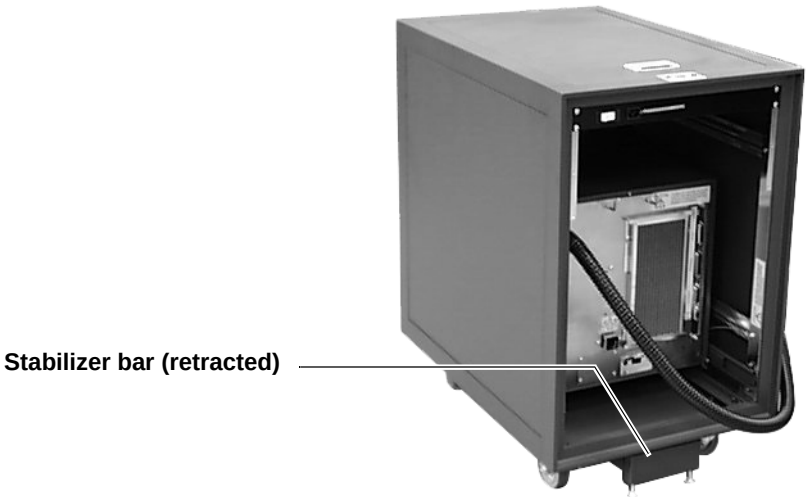
Printing Systems Only

When shipped with a printing system, the printer is enclosed in the system cabinet. To access internal printer components, use the following procedure to remove the printer from the system cabinet:

1. Extend the cabinet stabilizer.

   The stabilizer is located under the rear end of the cabinet (see Figure 5.1); pull it straight out.

Figure 5.1 Stabilizer bar, system enclosure

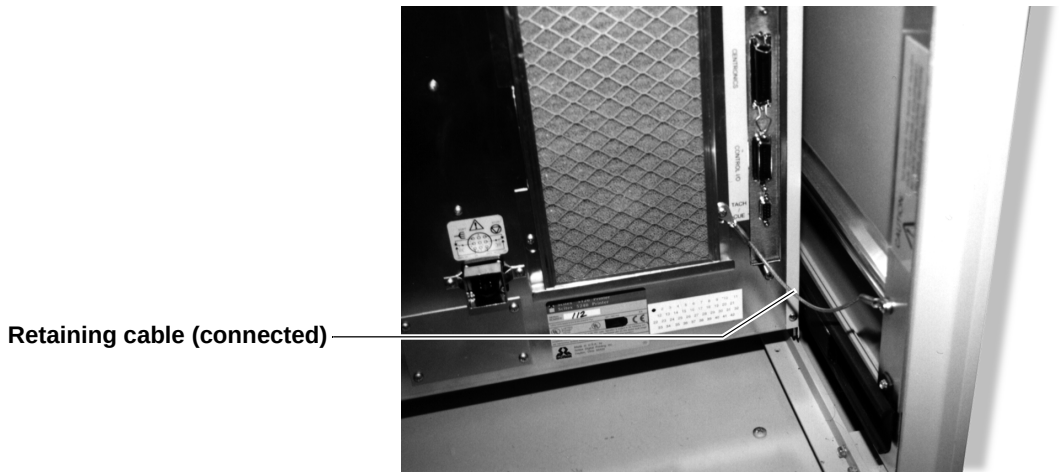


2. Secure the stabilizer bar with the two pins (screws) on the bottom of the stabilizer bar.

   Turn the pins down until they make contact with the floor.

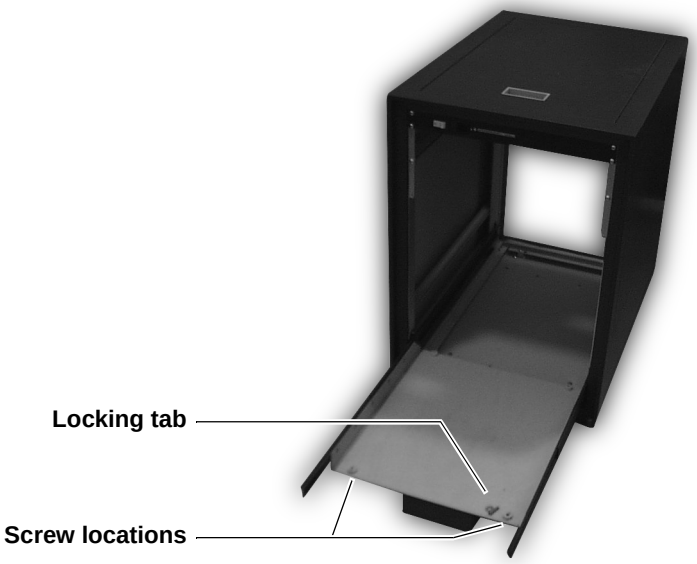
3. Disconnect the retaining cable connecting the printer to the enclosure (see Figure 5.2).

Figure 5.2 Retaining cable, printing system enclosure



4. Grasp the umbilical hanger on the printer rear panel and slowly pull out the printer and its mounting tray.
5. Remove the screws securing the printer to the tray (see Figure 5.3).
6. Slide the printer forward to release it from the locking tab on the tray.
7. Lift the printer off the tray.
8. To replace the printer, reverse the removal procedure.

Figure 5.3 Printer tray, printing system enclosure



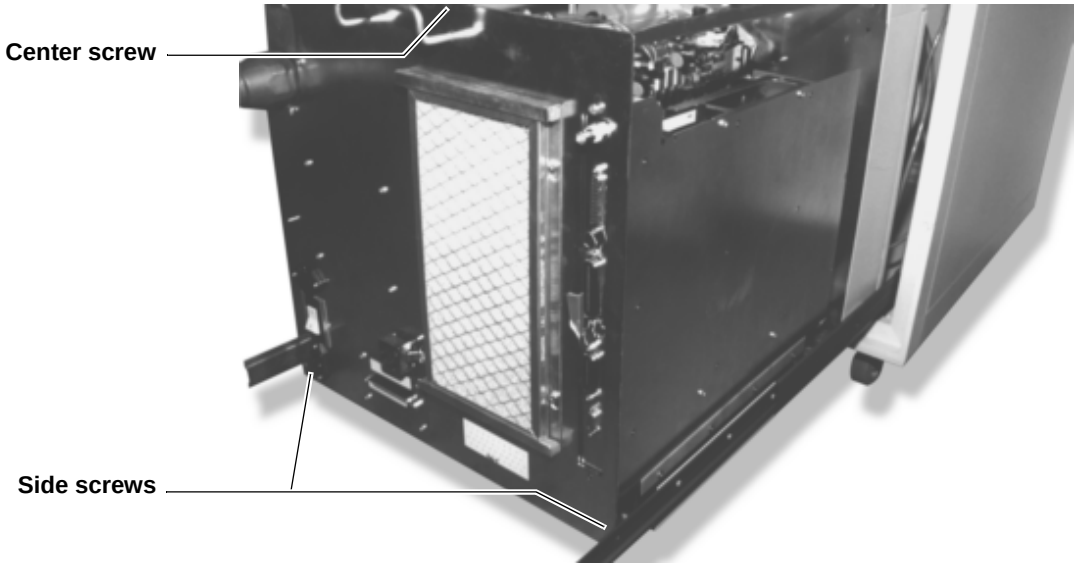
Cover Removal

To access internal printer components, the printer enclosure cover must be removed using the following procedure.

1. Put the printer circuit breaker in the offline [O] position.
2. Disconnect all cables from the printer rear panel.
3. Unplug the power cable from the printer.
4. Loosen the three captive screws on the printer rear panel that secure the cover.

   There are two bottom, side screws and a single top, center screw (see Figure 5.4).
5. Slide the printer cover toward you and lift it straight up and off of the printer enclosure.
6. To replace the cover, reverse the removal procedure.

Figure 5.4 Cover screw locations (cover removed)



Support Bracket Positioning

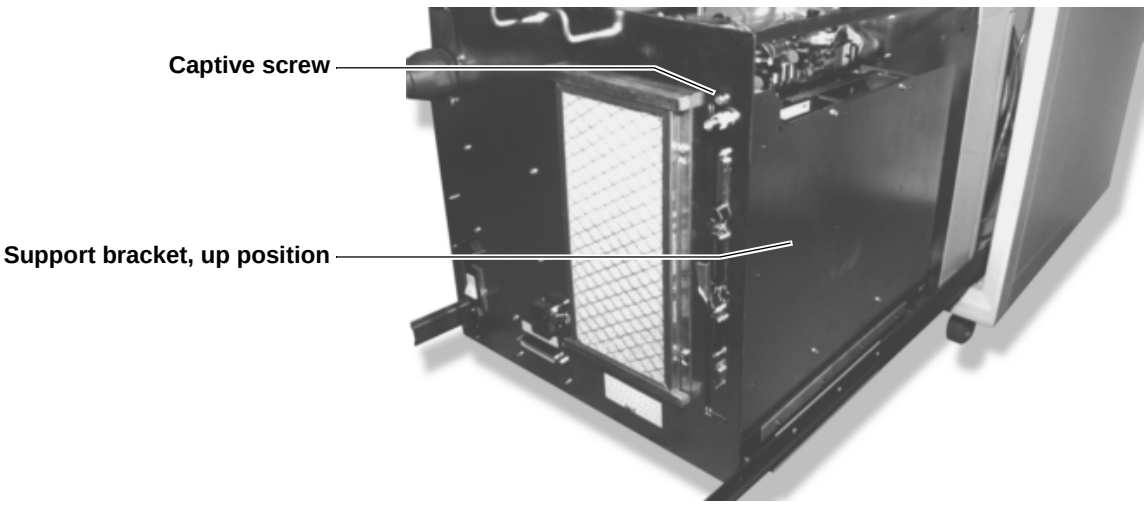
To access printer components in the electronics compartment of the printer, use the following procedure to put the support bracket that holds the Data System Main board in its maintenance position:

1. Disconnect cables from the following printer back panel connectors:
   - ETHERNET
   - RS 232
   - CENTRONICS
   - CONTROL I/O
   - TACH / CUE.

Note: Typically, only two or three connectors have cables attached.

2. Remove the printer enclosure cover (see “Cover Removal”).
3. Locate the support bracket on the right side of the printer (see Figure 5.5).
4. Loosen the two captive screws on the printer connector panel securing the support bracket to the printer enclosure.

Figure 5.5 Support bracket, location



5. Push the support bracket toward the front of the printer until the bracket can be lowered into the maintenance position (see Figure 5.6).

   In its maintenance position, the bracket rests at approximately a 45° angle.

6. To put the bracket back up, lift it into the upright position, and then pull it back until the connector panel fits into cutout in the printer rear panel.

7. Secure the bracket by tightening both captive screws.

Hint: It's easier to tighten the top screw first.

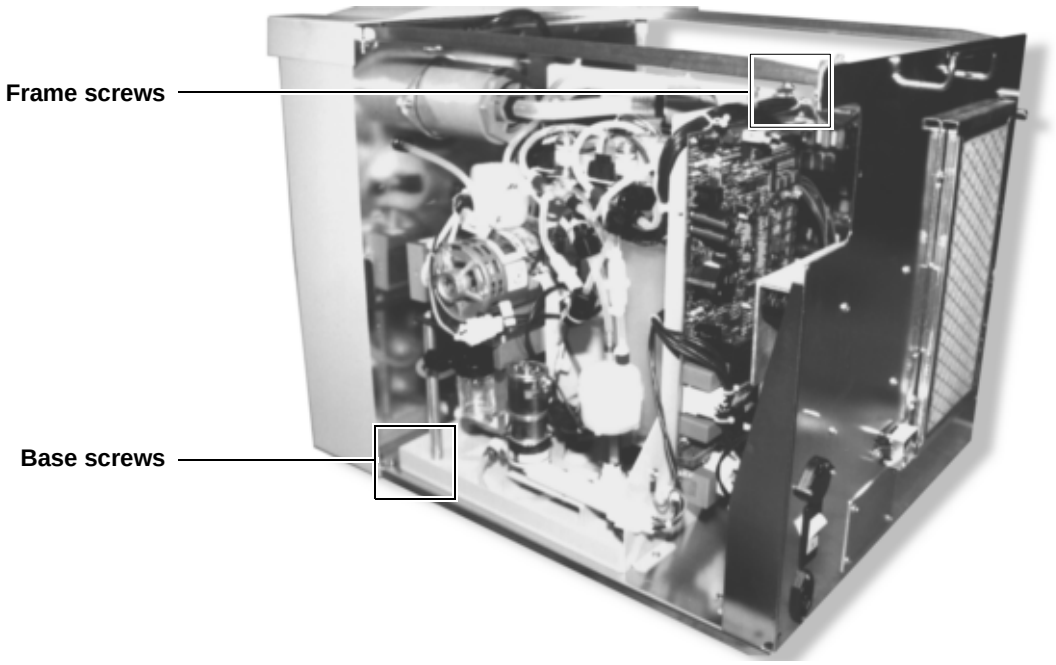
Figure 5.6 Support bracket, service position

Fluid Chassis Removal

Certain fluid system FRUs are difficult to access without shifting the fluid chassis. The chassis is the tray that the fluid system sub-assembly is installed in. Use the following procedure to remove the chassis or unfasten it to move it aside.

1. Remove the two screws securing the chassis frame to the top of the printer (see Figure 5.7).

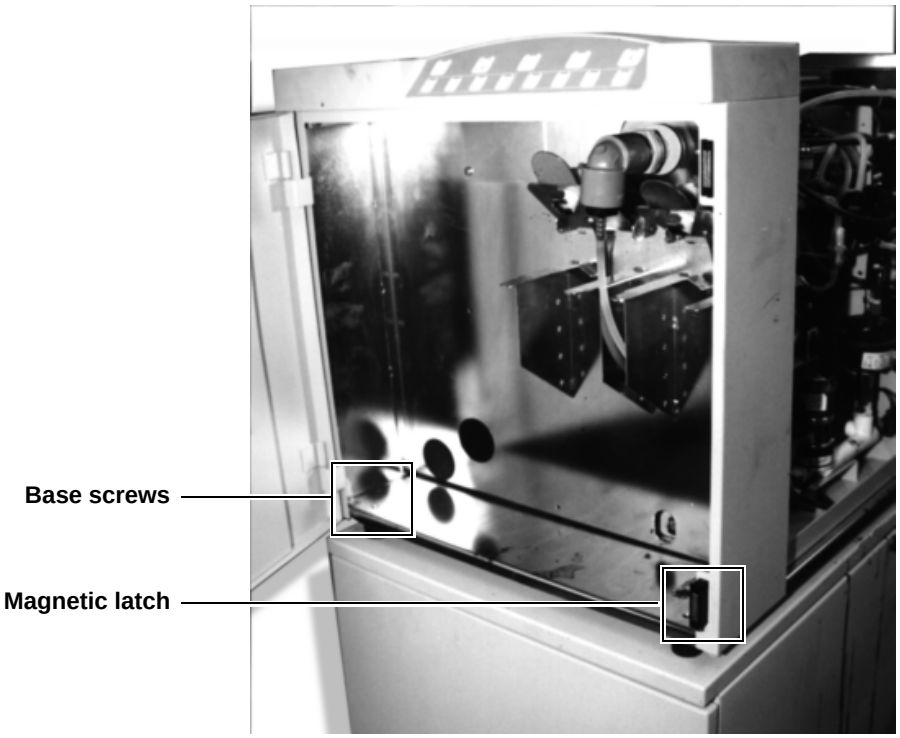
Figure 5.7 Fluid chassis removal, frame screws



2. Remove the three screws securing the rear section of the chassis to the printer base plate.
3. Remove the operator panel.

4. Remove the magnet (latch) mounted on the right side of the fluid compartment (see Figure 5.8).
5. Remove the two screws securing the front of the chassis to the printer base plate.

Figure 5.8 Fluid chassis removal, base plate screws



Drain and Flush Procedures

Before performing a fluid system replacement procedure, drain the ink tank. Draining is adequate for most procedures; it typically prevents a significant amount of ink from spilling. For some removal procedures, such as changing a pump or the ink tank, ink leakage cannot be avoided unless the system is completely drained using the flush procedure.

The flush procedure is required only in the following situations:

- To change from ANY ink to any non-black ink. Even to change from a lighter color to darker one, residual ink will discolor the new ink if the system is not flushed.
- To change from Scitex Black Ink P2 to any other ink. Residual P2 ink contamination adversely affects the performance of other inks.

The flush kit (0177491) is required to perform the flush procedure. The flush kit provides purge fluid, instructions (0113921), and fittings. Extra fittings are provided for the 5120 printer and early 5240 printers. The standard fittings are used for the current 5240 printer (any 5240 with serial number 3000 or higher, for example: 2041998xxxx040**3023**) and the 5122 printer. The fittings kit (0178605) also contains components that can be used for the drain and flush procedures.

To drain the ink tank, use the following procedure:

1. Open the ink compartment door.
2. Remove both fluid containers.
3. Place a quick-disconnect line in a waste ink container with a capacity of at least 5 liters (1.32 gallons).
4. Connect the DRAIN TUBE (0139687) to the drain connector (see Figure 5.9).

Caution: Be ready to collect the ink as soon as the line is connected.

Figure 5.9 Drain tube installed, 5122 printer

Base Plate and Electronics

This section describes the FRUs listed in Table 5.2.

Table 5.2 Base plate and electronics FRUs

Product[1]	Part Number	Description	Heading:
All	0139687	DRAIN TUBE	“Drain Tube”
All	0178527	CABLE, DS MAIN TO IJC	“DS Main to IJC Cable”
All	0178528	CABLE, DS OUTPUT TO IJC	“DS Output to IJC Cable”
All	0178529	CABLE, BREAKER TO ACHV	“Circuit Breaker to ACHV Cable”
All	0178531	CABLE, RELAY OUTPUT TO ACHV	“Relay Output to ACHV Cable”
All	0178536	VOLTAGE SELECTOR SWITCH ASSY	“Voltage Selector Switch”
All	0178540	AC LINE FILTER ASSEMBLY	“AC Line Filter”
All	0178548	CABLE, ACHV TO IJC	“ACHV to IJC Cable”
All	0178549	CABLE, OP PANEL TO IJC	“Operator Panel to IJC Cable”
All	0178553	CIRCUIT BREAKER	“Circuit Breaker”
5120	0178566	FAN 115V AC (5120)	“Fans”
All	0178578	OPERATOR PANEL ASSEMBLY	“Operator Panel”
All	0178586	TRANSFORMER ASSY	“Transformer”
All	0178606	FUSE 6.3A IJC QTY 10	“IJC Board Fuse”
5120	0178607	FUSE, 10A SELECTOR SW QTY 10	“Voltage Selector Switch Fuse”
All	0178609	FUSE, 4 AMP ACHV QTY 10	“ACHV Board Fuses”
All	0178612	FILTER, AIR	“Air Filter”
5120	0178714	FUSE, 40MA ACHV QTY 10	“ACHV Board Fuses”
5120 and early 5240	0180087	POWER SUPPLY-LOW VOLTAGE (FRU)	“Low Voltage Power Supply”
Current 5240 and 5122	0181462	CABLE-OP PANEL TO IJC (240N)	“Operator Panel to IJC Cable”
All	0187298	PRINTER FOOT FRU	“Printer Foot”
All	0188272	CABLE-VOLTAGE SWITCH JUMPER (FRU)	“Voltage Switch Jumper Cable”
Current 5240 and 5122	0188766	CABLE, DS OUTPUT TO IJC (FRU)	“DS Output to IJC Cable”
Current 5240 and 5122	0188767	CABLE, DS MAIN TO IJC (FRU)	“DS Main to IJC Cable”
Current 5240 and 5122	0187892	OPERATOR PANEL DARK ASSY DARK GREY	“Operator Panel”
All	P0178571	PCB, ACHV ASSY FRU	“ACHV Supply Board”
5120	P0178576	PCB, IJC ASSY (120)	“Inkjet Controller Board”
	P0178592	UMBILICAL/PH HOUSING 120-12 FT	“Umbilicals”
	P0178593	UMBILICAL/PH HOUSING 120-24 FT	“Umbilicals”
Early 5240	P0178594	UMBILICAL/PH HOUSING 240-12 FT	“Umbilicals”
	P0178595	UMBILICAL/PH HOUSING 240-24FT	“Umbilicals”
Early 5240	P0180553	PCB, IJC ASSY - 240 FRU	“Inkjet Controller Board”
Current 5240	P0182428	UMBILICAL/PH HOUSING- (240N) 12’ FRU	“Umbilicals”
Current 5240	P0182429	UMBILICAL/PH HOUSING- (240N) 24’ FRU	“Umbilicals”
Current 5240	P0182680	PCB, IJC ASSY - 240N FRU	“Inkjet Controller Board”
5122	P0188038	UMBILICAL-2", 120 DPI, 12 FT.ASSY (FRU)	“Umbilicals”
	P0188041	UMBILICAL-2", 120 DPI, 24 FT.ASSY (FRU)	“Umbilicals”
Current 5240 and 5122	P0188153	PCB-IJC ASSY, 5122 (FRU)	“Inkjet Controller Board”
Current 5240 and 5122	P0188157	POWER SUPPLY-LOW VOLTAGE (5240N 5122) (FRU)	“Low Voltage Power Supply”

1. All denotes parts compatible with the 5120, the early 5240, and the current 5240.

ACHV Supply Board

The Alternating Current High Voltage (ACHV) supply board FRU (P0178571) can be either of two boards (see Figure 5.10 and Table 5.3).

Configuration instructions (0114093) are shipped with the ACHV supply board FRU; the instructions summarize the information in this section.

Replacing the ACHV board consists of the following procedures:

- ACHV configuration
- ACHV replacement.

Figure 5.10 ACHV supply board FRU (P0178571)

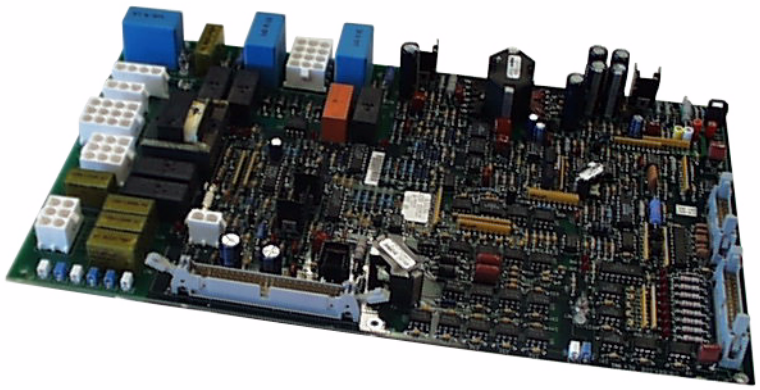


Table 5.3 ACHV board part numbers

FRU	Number	Notes:
ACHV SUPPLY PCB W/FUNC TEST	0181700	5120 and early 5240
ACHV SUPPLY PCB W/FUNCTIONAL TEST	0184504	Current 5240 and 5122

ACHV Board Configuration

FRU must be configured before it is installed; use the following procedure:

1. Unpack the FRU and check the board label to determine the board model (see Figure 5.11).
2. For board 0181700, verify that the jumpers are set correctly (see Table 5.4 and Figure 5.12)
3. For board 0184504, verify that the jumpers are set correctly (see Table 5.4 and Figure 5.13).
4. Use the complete board layout (Figure 5.14) of 0181700 as a general reference.

Figure 5.11 ACHV supply board label location

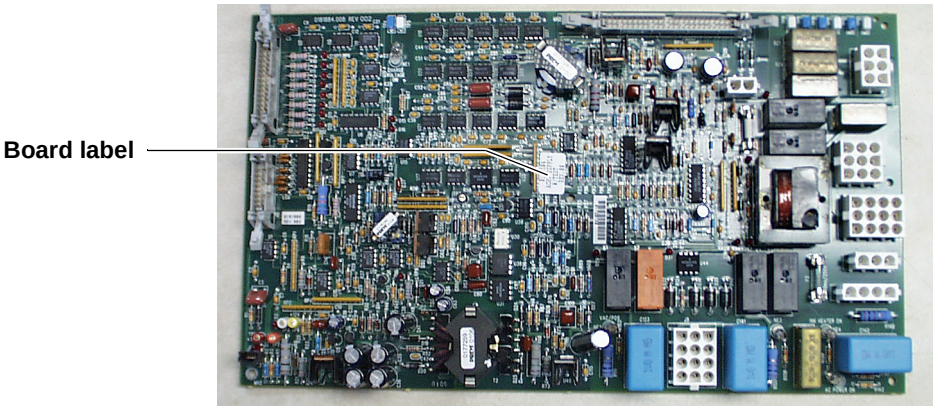


Table 5.4 Jumper settings, ACHV supply board FRUs

To Select:	Board 0181700		Board 0184504		
	JP1	JP2	JP1	JP2	JP3
5120 operation	ON Pins 2-3	ON Pins 1-2	Not installed	ON pins 1-2	Not installed[1]
5240 or 5122 Operation	ON Pins 1-2	ON Pins 2-3	ON pins 1-2	Not installed	ON pins 1-2

1. Second shunt is hung on one pin.

Figure 5.12 Jumper locations, ACHV board FRU 0181700

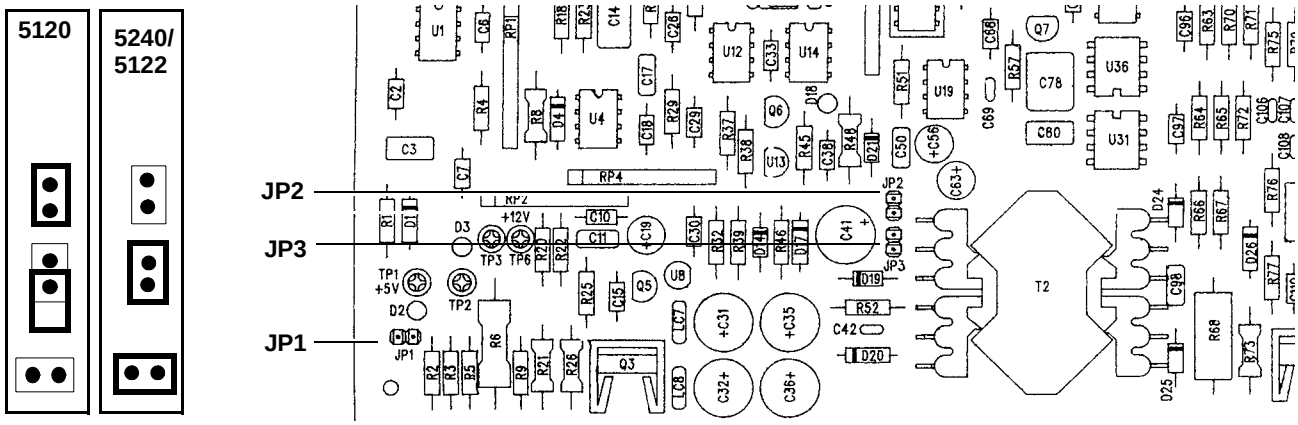


Figure 5.13 Jumper locations, ACHV board FRU 0184504

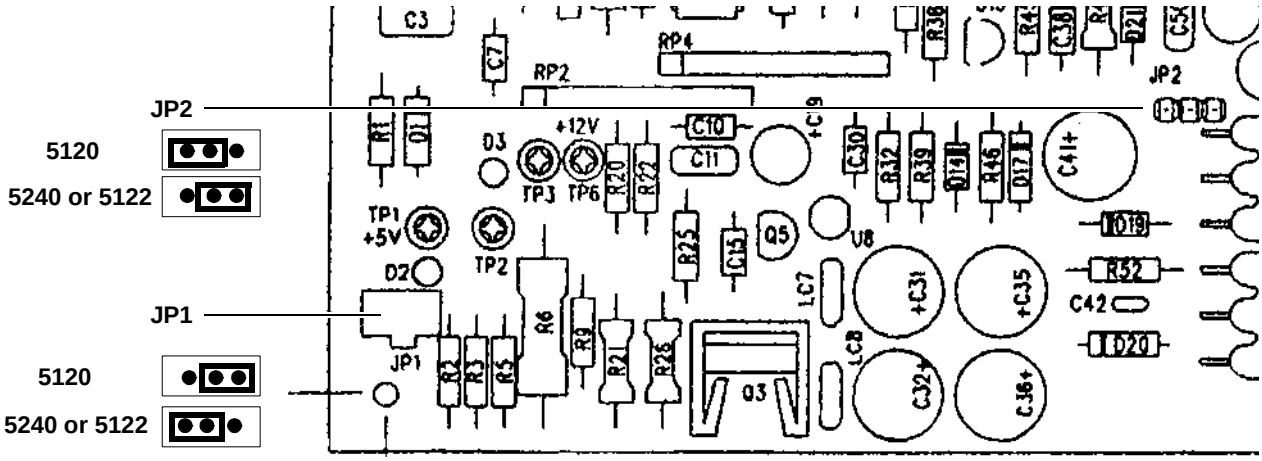
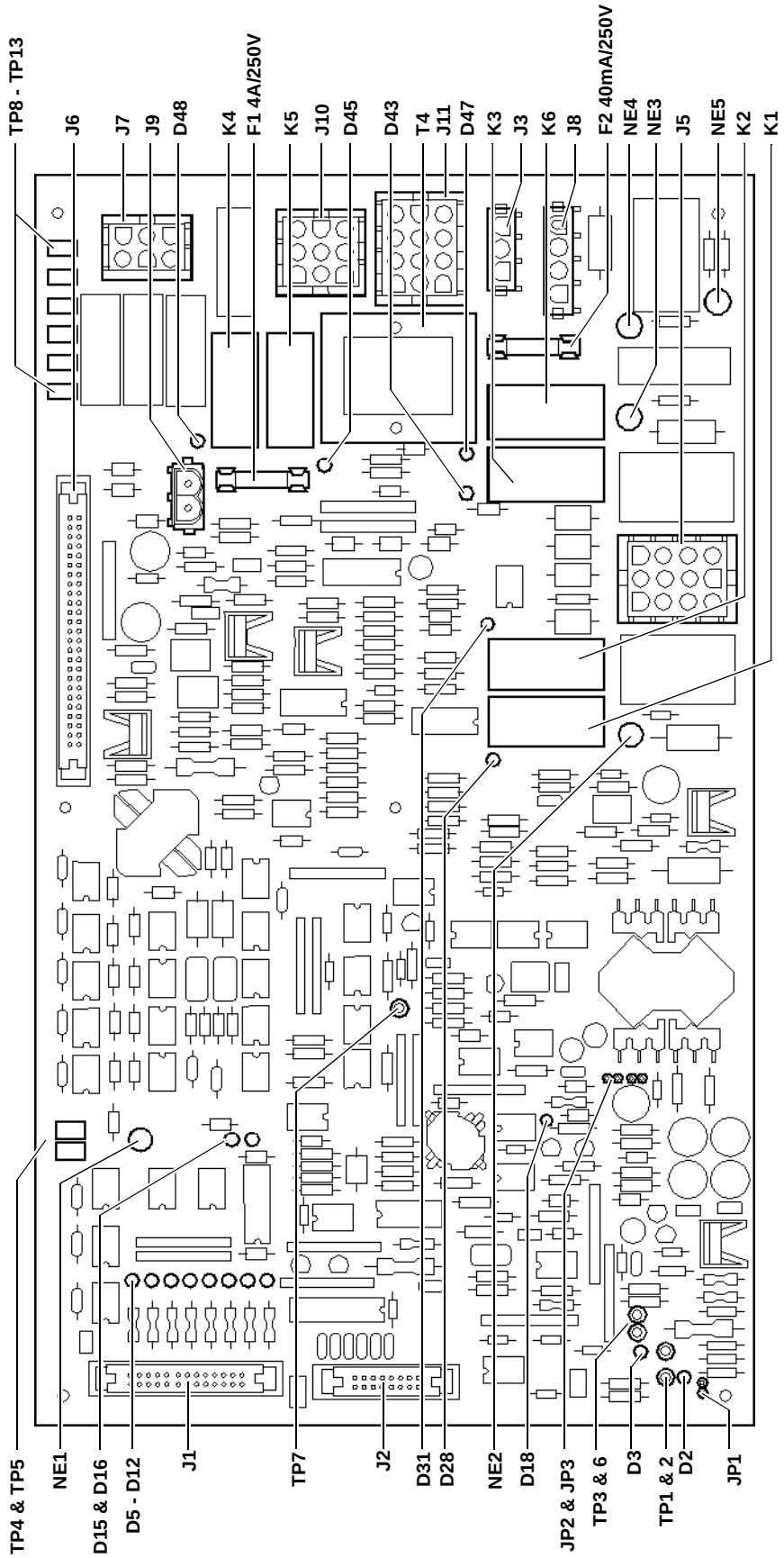


Figure 5.14 ACHV board layout (0181700)

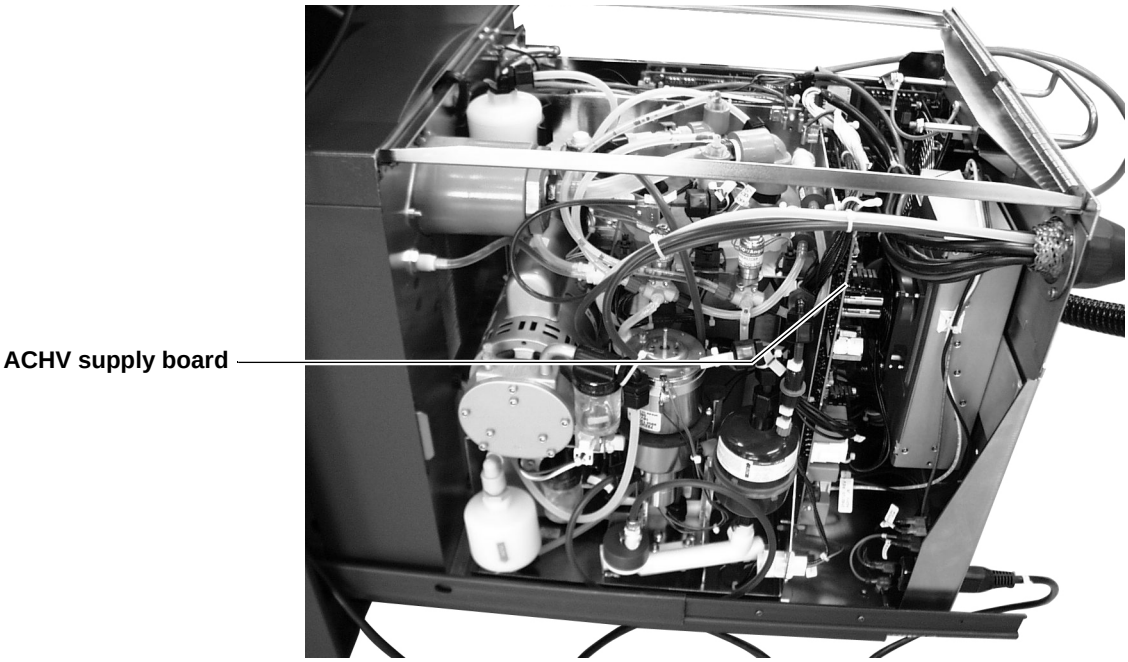


ACHV Board Replacement

Use the following procedure to replace the ACHV board:

1. Locate the ACHV supply board mounted on the back wall of the fluid chassis (see Figure 5.15).

Figure 5.15 ACHV supply board location, 5122 printer



2. Remove the air filters and fans (see those sections).
3. Disconnect all eight cables from the ACHV board (see Table 5.5).

Table 5.5 ACHV board cables and connectors[1]

ACHV Connector	Function:	Part Number
J1	Print data to printhead	P0188041
J2	Charge voltage to printhead	P0188041
J3	K6 soft down connection to circuit breaker	0178529
J5	AC line voltages to fluid system and fans (multiple plugs)	0178500
J6	Inkjet controller board	0178548
J7	Relay output connector	0178531
J8	LVPS connection, 2-wire	Wiring
J9	LVPS, terminal block connection, 2-wire	Wiring
J10	Wire bundle to Voltage Selector Switch	0178536
J11	Wire bundle to transformer supply[2]	0178586

1. These is no connector J4 on the ACHV supply board
2. Not installed in 5122.

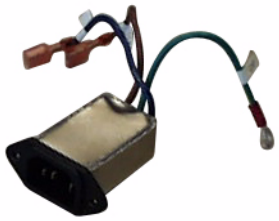
4. Remove the four screws securing the corners of the board to the rear panel of the fluid supply housing.

5. Locate the following plastic barbs and standoffs:
   - Center
   - Bottom center
   - Lower left corner.
6. Press down on the barbs to release the board from the standoffs.
7. Position the replacement board on the rear panel of the fluid supply housing, and then carefully press it down on to the standoffs.
8. Replace the four screws to secure the board.
9. Reconnect all cables, and then replace the air filter and fans.

AC Line Filter

The AC line filter assembly (0178540) is used in all 5000 series printers (see Figure 5.16).

Figure 5.16 AC line filter assembly (0178540)



Use the following procedure to replace the AC line filter:

1. Locate the AC line filter mounted in the printer back panel below the circuit breaker (see Figure 5.17).
2. Unplug the two spade lugs from the circuit breaker. The wires are blue and brown.
3. Disconnect the green ground wire from the chassis.
4. Remove the screw securing the ground wire to the base plate.

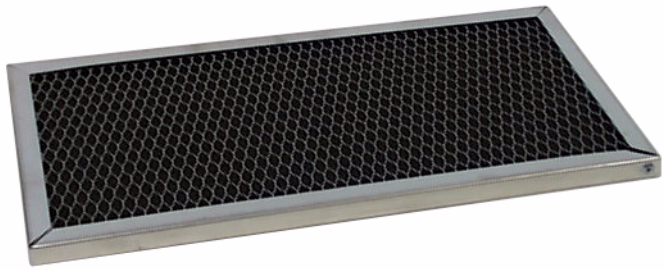
   Retain and reinstall the lock washer on the base plate side of the ring terminal.
5. Remove the two screws securing the AC line filter assembly to the back panel.
6. Install the replacement line filter assembly in the back panel cutout, secure it with two screws and reconnect all three wires.

Figure 5.17 AC line filter removal

Air Filter

The cabinet air filter (0178612) is mounted in a bracket on the printer rear panel. This filter is reusable and can be removed, cleaned and reinstalled (see Figure 5.18).

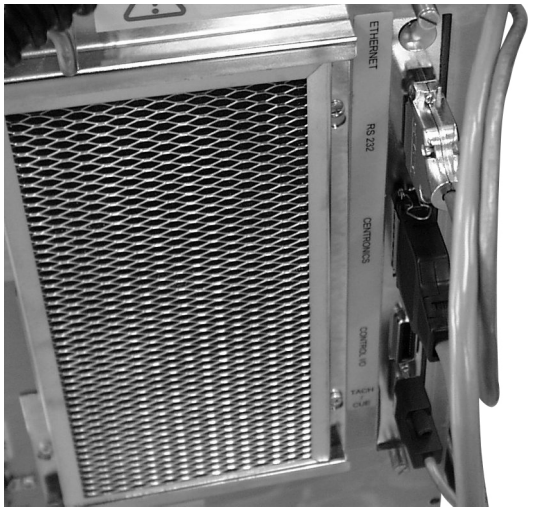
Figure 5.18 Cabinet air filter (0178612)



Use the following procedure to remove or replace the (cabinet) air filter:

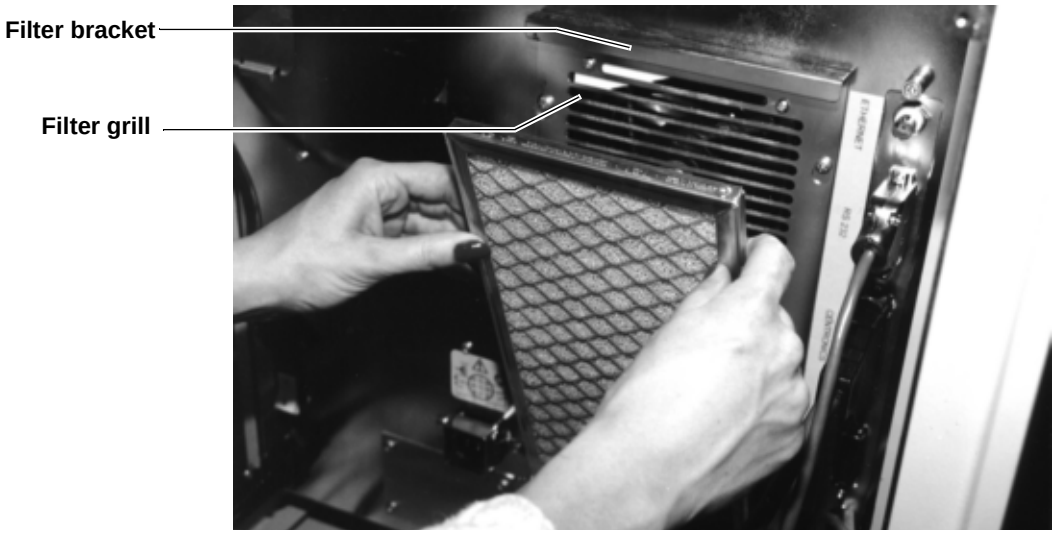
1. Locate the filter in its bracket on the printer rear panel (see Figure 5.19).

Figure 5.19 Air filter (cabinet)



2. Grasp the sides of the air filter and press down on it until the top of the air filter slides out of the top air filter bracket.
3. Lift the air filter out of the air filter bracket (see Figure 5.20).

Figure 5.20 Air filter replacement, printer enclosure



4. To clean the filter, wash it with water and mild detergent, then air dry. Reinstall the filter only after it is completely dry. Install a second, clean, dry filter while the original filter is drying.
5. If cleaning does not return the filter to its original appearance, replace the filter.
6. Position the bottom of the replacement filter in the bottom of the bracket.
7. Press down on the top of the air filter until it slides under the top bracket.

Base Plate and Electronics Cables

This section describes the following cables:

- ACHV to IJC cable (0178548)
- Circuit breaker to ACHV cable (0178529)
- DS main to IJC cable (0178527 and 0188767)
- DS output to IJC cable (0178528)
- Operator panel to IJC cable (0178549 and 0181462)
- Relay output to ACHV cable (0178531).
- Voltage switch jumper cable (0188272).

Cables are illustrated and each connection is described, but step-by-step removal procedures are not provided.

The printhead umbilical is described separately (see “Umbilicals”).

ACHV to IJC Cable

The ACHV to IJC cable (0178548) connects J6 on the ACHV supply board to J5 on the Inkjet controller board. This cable has manufacturing part number 0175789.

Figure 5.21 ACHV to IJC cable (0178548)

Circuit Breaker to ACHV Cable

The circuit breaker to ACHV cable (0178529) connects J3 on the ACHV supply board to the two spade lugs on the top of the circuit breaker. This cable has manufacturing part number 0175792.

The connector on the J3 end of the ACHV supply board has clips that hold it in place. Squeeze the clips to unplug the cable.

Figure 5.22 Circuit breaker to ACHV cable (0178529)

DS Main to IJC Cable

The DS Main to IJC cable (see Figure 5.23) connects J6 on the DS Main board to J4 on the Inkjet Controller board. In the 5120 and early 5240, this cable has manufacturing part number 0177497. In the current 5240 and 5122, this cable has manufacturing part number 0182398.

Table 5.6 DS main to IJC cable FRUs

Printer	FRU Number	Cable Number
5120	0178527	0177497
Early 5240		
Current 5240	0188767	0182398
5122		

Both ends of the cable are labeled with the connector number and board.

The braid on this cable is strapped to the printer base plate. The strap is secured with a screw. Remove the screw and loosen the strap to remove the cable. After installing the replacement cable, slide the braid under the strap to secure the cable to the board, and then tighten the screw.

Figure 5.23 DS Main to IJC cable (0188767)

DS Output to IJC Cable

The data system output to inkjet controller cable FRU (see Table 5.7) connects J2 on the data system output board to J10 on the Inkjet Controller board. The 5120 and early 5240 cable has a grounding wire. The current 5240 and 5122 cable has a grounding screw and clip (see Figure 5.24).

Table 5.7 DS output to IJC cable FRUs

Printer	FRU Number	Cable Number
5120 and early 5240	0178528	0177486
Current 5240 and 5122	0188766	0182699

Figure 5.24 DS output to IJC cable (0188766)

Use the following procedure to replace this cable:

1. Remove the screw securing the grounding wire (shield terminal).

   In the 5120 and early 5240, the grounding wire connects to the DS output board. In the current 5240 and the 5122, the grounding wire connects to the base plate.

2. Disconnect the DS output to IJC cable from connector J2 on the DS output assembly PCB.
3. Disconnect the other end of the cable from connector J10 on the IJC board.
4. Rout and connect the replacement cable exactly like the old cable

   Both ends of the cable are labeled with the connector number and board.
5. Reconnect the grounding wire.

Operator Panel to IJC Cable

The operator panel to inkjet controller cable connects J1 on the operator panel to J3 on the Inkjet Controller board. The 5120 and early 5240 require a different FRU than the current 5240 and 5122 (see Table 5.8 and Figure 5.25).

Table 5.8 Operator panel to IJC cable FRUs

Printer	FRU Number	Cable Number
5120	0178549	0177496
Early 5240		
Current 5240	0181462	0182731
5122		

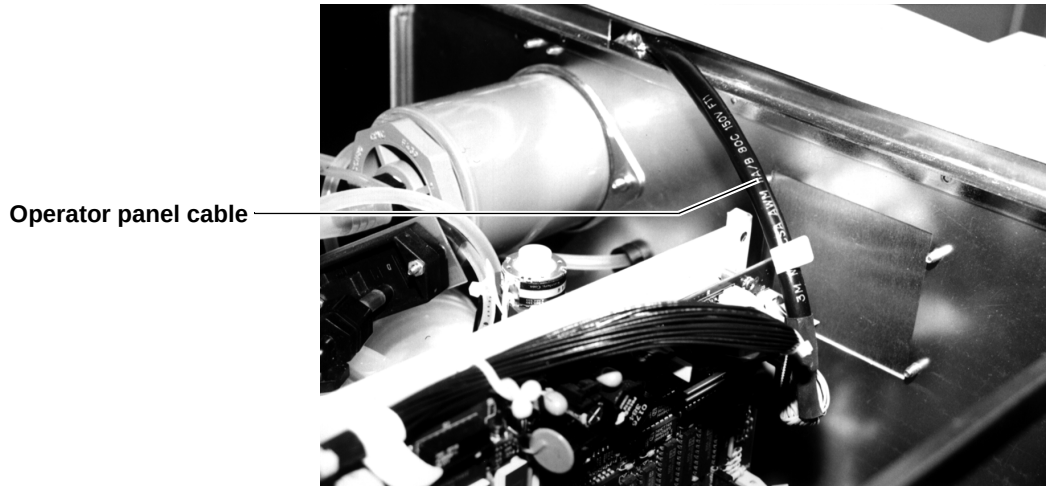
Note: Cable 0178549 for the 5120 and early 5240 does not have a ground wire.

Figure 5.25 Operator panel to IJC cable (0181462)

Use the following procedure to replace this cable:

1. Locate the operator panel cable just behind the operator panel (see Figure 5.26).
2. Remove the vacuum regulator filter to access the ground screw (current 5240 and 5122 only).

Figure 5.26 Operator panel cable location, early 5240



3. For a 5120 or early 5240, open the plastic tie securing the braid to the OP panel to IJC cable, and then remove the screw and washer securing the braid to the cable.

4. Disconnect the OP panel to IJC cable from connector J3 on the IJC board.

5. Disconnect the other end of the cable from the operator panel connector (not numbered). There is only one connector on the operator panel; it is J1.

6. Take the cable out through the opening in the back (top) of the operator panel cover.

7. Rout and connect the replacement cable exactly like the old cable. To connect the cable to the operator panel, access the connector through the front door of the printer.

8. After installing the replacement cable, replace the plastic ties and secure the braid.

Relay Output to ACHV Cable

The relay output to ACHV cable (0178531) connects the sort relay output connector to J7 on the ACHV supply board (see Figure 5.27). This cable has manufacturing part number 0175794.

Figure 5.27 Relay output to ACHV cable (0178531)

Use the following procedure to replace this cable:

1. Remove the air filter (see “Air Filter”).
2. Remove the fans (see “Fans”).
3. Disconnect the ACHV supply board end of the cable.
4. Remove the two screws securing the connector guard to the relay output connector. Set the guard aside for reattachment.
5. Remove the four screws securing the other end of the cable to the relay output connector.
6. After installing the replacement cable, secure it to the relay output connector with four screws, and then replace the screws securing the connector guard.

Caution: Install the replacement cable with connector pin 4 up (toward the top of the printer). This is same orientation as the replaced cable.

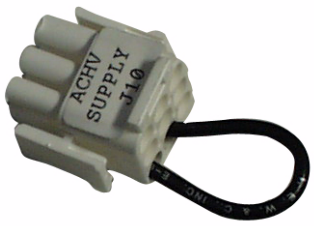
7. Replace the fans and air filter.

5122 Only

Voltage Switch Jumper Cable

The voltage switch jumper cable (0188272) plugs into J10 on the ACHV supply board (see Figure 5.28). This jumper replaces the voltage selector switch assembly (0178536) in the 5122 only; it has manufacturing part number 0188274.

Figure 5.28 Voltage jumper cable (0188272)



Circuit Breaker

The circuit breaker (0178553) is used in all 5000 series printers (see Figure 5.29).

Use the following procedure to replace the circuit breaker:

1. Locate the circuit breaker behind the power (line) switch on the inside of the printer enclosure in the lower left corner of the printer back panel.

Figure 5.29 Circuit breaker (0178553)

Wiring pattern (back of circuit breaker)

22 Black	12 Black
21 Blue	11 Brown

2. Note the connections of the four wires, and then disconnect the four spade lugs from the circuit breaker (see Figure 5.30).
3. Remove the circuit breaker by pushing down on the four tabs and then pulling straight out.
4. Push the replacement circuit breaker through the cutout in the back panel.
5. Reconnect the four spade lugs to the connectors on the circuit breaker.

Figure 5.30 Circuit breaker removal, electronics compartment

Drain Tube

The drain tube (0139687) is used to empty the ink tank of all 5000 series printers (see Figure 5.31 and “Drain and Flush Procedures”). The male fitting on the drain tube fits the female quick-disconnect between the two fluid containers inside the fluid container compartment of the printer.

Figure 5.31 Drain tube (0139687)

Fans

Printer enclosure fan (0178566) is used in all 5000 series printers (see Figure 5.32). The two fans are identical and the same FRU.

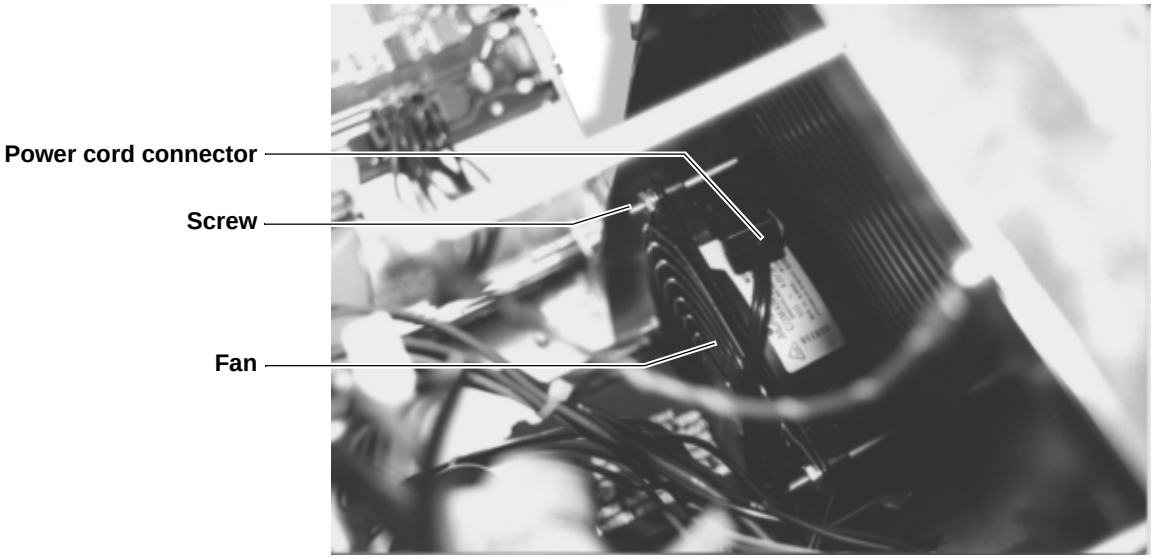
Figure 5.32 Fan, printer enclosure (0178566)

Use the following procedure to replace either fan.

1. Locate the fans mounted to the back of the air filter grate.
2. Remove the air filter and bracket.

3. Unplug the power cords from the connectors on top of both fan housings (see Figure 5.33).

Figure 5.33 Fan (0178566), removed



4. Loosen the four screws securing the grill to the printer rear panel.

5. Take the grill off the back panel.

Caution: Mount the fan with its airflow arrow pointing into the printer (the arrow is on the label). The fans should turn counter-clockwise when you are facing the back of the printer. Installing the fans backwards can cause overheating of printer components, and overheated components may fail.

6. Remove four screws, lock washers, and nuts securing the fan to the grill.

Note: On a 5240, remove the cardboard deflector.

7. Install the replacement fan on the grill in the same orientation as the old fan. Position the fan power connectors up.

Caution: Do not over-tighten the screws securing the fan housing. Snug is enough. Over-tightening warps the housing and causes the fan bearing to fail.

8. Reinstall the grill.

9. Plug the power cords back into both fans.

Fuses

The following fuses are FRUs:

- ACHV board fuses (0178609 and 0178714)
- IJC board fuse (0178606)
- Voltage selector switch fuse (0178607).

ACHV Board Fuses

Two ACHV supply board fuses are FRUs (see Table 5.9). The same fuses are used in both ACHV supply board FRUs (see Figure 5.34).

Table 5.9 ACHV board fuses

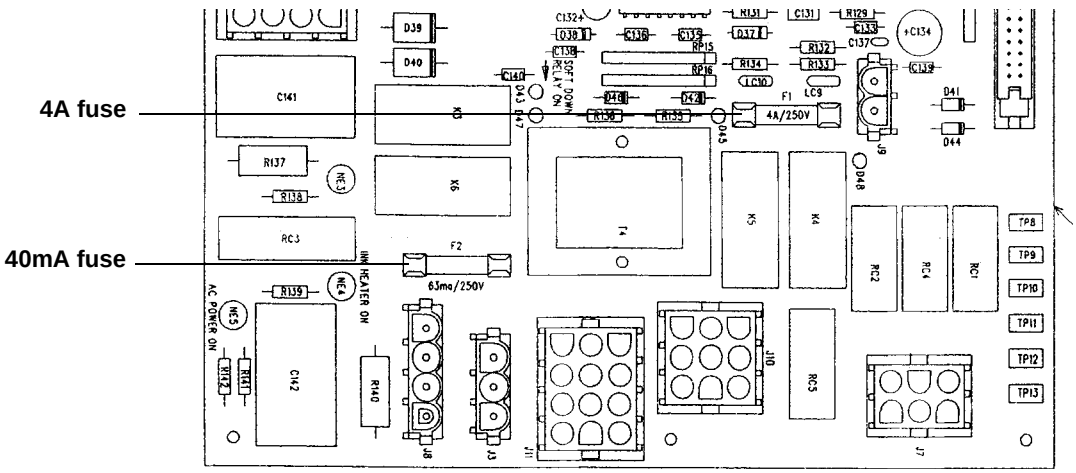
Printer	FRU Number	Rating
All	0178609	4A, 250V
All	0178714	40 mA, 250V

Figure 5.34 ACHV board fuses (0178609 and 0178714)

Use the following procedure to replace either ACHV board fuse:

1. Locate the blown fuse.
   - The 4-Amp fuse is labeled F1 and located near connector J9
   - The 40-milliampere fuse is labeled F2 and located near connectors J3 and J8 (see Figure 5.35).
2. Confirm that the fuse is blown (silver filament broken, melted, or glass blackened).
3. Use an appropriate fuse-pulling tool or a small screwdriver to pry out the fuse.
4. Gently press on the fuse into the silver clips (fuse orientation is not significant).

Figure 5.35 ACHV supply board fuse locations



IJC Board Fuse

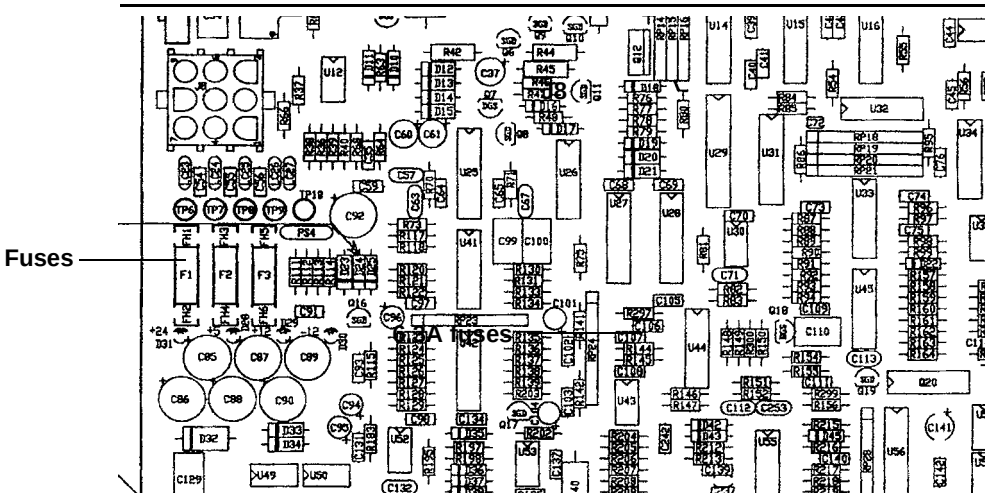
The three identical (0178606) on the inkjet controller board are the same FRU (see Figure 5.36). These 6.3A, 250V fuses protect the +5, +12, and +24 power supplies. The same fuse is used on all inkjet controller board FRUs.

Figure 5.36 Inkjet controller board fuse (0178606)

Use the following procedure to replace an inkjet controller board fuse:

1. Locate fuses F1, F2, and F3 next to connector J8 (see Figure 5.37).
2. Confirm that the fuse is blown (silver filament parted or glass blackened).
3. Use a fuse-puller, or small screwdriver to pry out the fuse.
4. Gently press the replacement fuse into the silver clips (fuse orientation is not significant).

Figure 5.37 Inkjet controller board fuse location



Voltage Selector Switch Fuse

5120 and 5240 Only

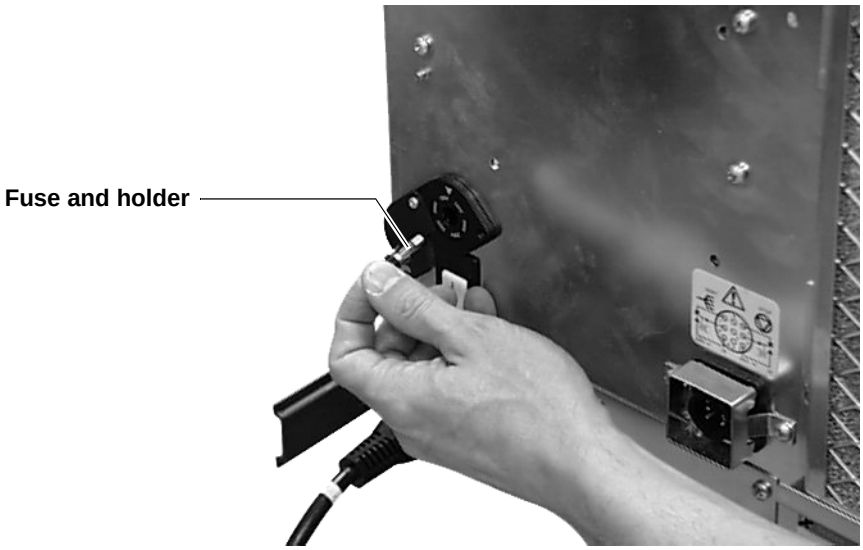
The 10A fuse (0178607) that protects the voltage selector switch is installed inside that switch (see Figure 5.38 and "Voltage Selector Switch"). The 5122 does not require this fuse; it does not have the switch.

Figure 5.38 Voltage selector switch fuse (0178607)

Use the following procedure to replace the voltage selector switch fuse:

1. Loosen two screws securing the voltage selector switch assembly safety cover; rotate the cover counter-clockwise.
2. Remove the plastic fuse holder from the switch assembly (see Figure 5.39).
3. Remove the fuse from the end of the holder.
4. Insert the new fuse into the holder.
5. Replace the holder and turn it to secure it in the switch assembly.
6. Return the safety covers to its original position and secure it.

Figure 5.39 Voltage selector switch fuse location



Inkjet Controller Board

The Inkjet Controller board is a different FRU in each 5000 series printer (see Table 5.10 and Figure 5.40).

Caution: All fluid system memory is lost when the Inkjet Controller board is removed. All fluid system setup parameters must be reentered using Jetscape Diagnostics (see Chapter 1).

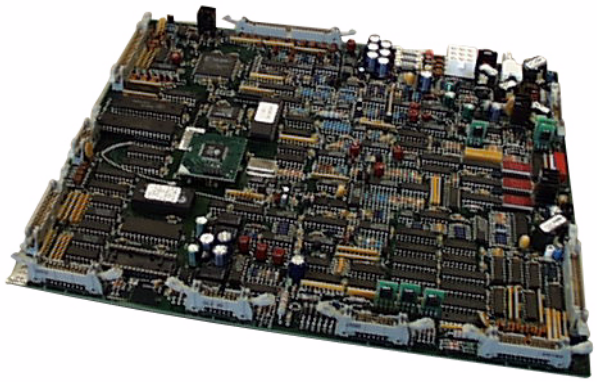
Table 5.10 Inkjet controller board FRUs

Printer	FRU Number	Board Number
5120	P0178576	0186278
Early 5240	P0180553	0186277
Current 5240	P0182680	0186279
5122	P0188153	0188154

Replacing the inkjet controller board consists of the following procedures:

- IJC board configuration
- IJC board replacement.

Figure 5.40 Inkjet Controller board, 5122 (P0188153)



IJC Board Configuration

Use the following procedure to configure the replacement Inkjet controller board:

1. Check all jumpers and verify that the correct shunts are installed (see Table 5.11 and Figure 5.41).

Table 5.11 Inkjet controller board jumpers, 5000 series printers

	Board FRU			
Jumper	**P0178576**	**P0180552**	**P0182680**	**P0188153**
JP2	-	-	ON	ON
JP3	ON	ON	-	-
JP4	ON	ON	ON	ON
JP9	-	-	ON	ON
JP13	-	-	ON	ON
JP15	ON	ON	-	-
JP16	ON	ON	-	-
JP17	ON	ON	-	-
JP18	-	-	-	-
JP19	-	-	-	-

2. Set the switches to match the switch settings on the old Inkjet Controller board. For all configurations, switches 1 through 6 and switch 8 in bank S1 are set CLOSED. Switch 7 should be set OPEN (switch bank S1 is near connector J1).

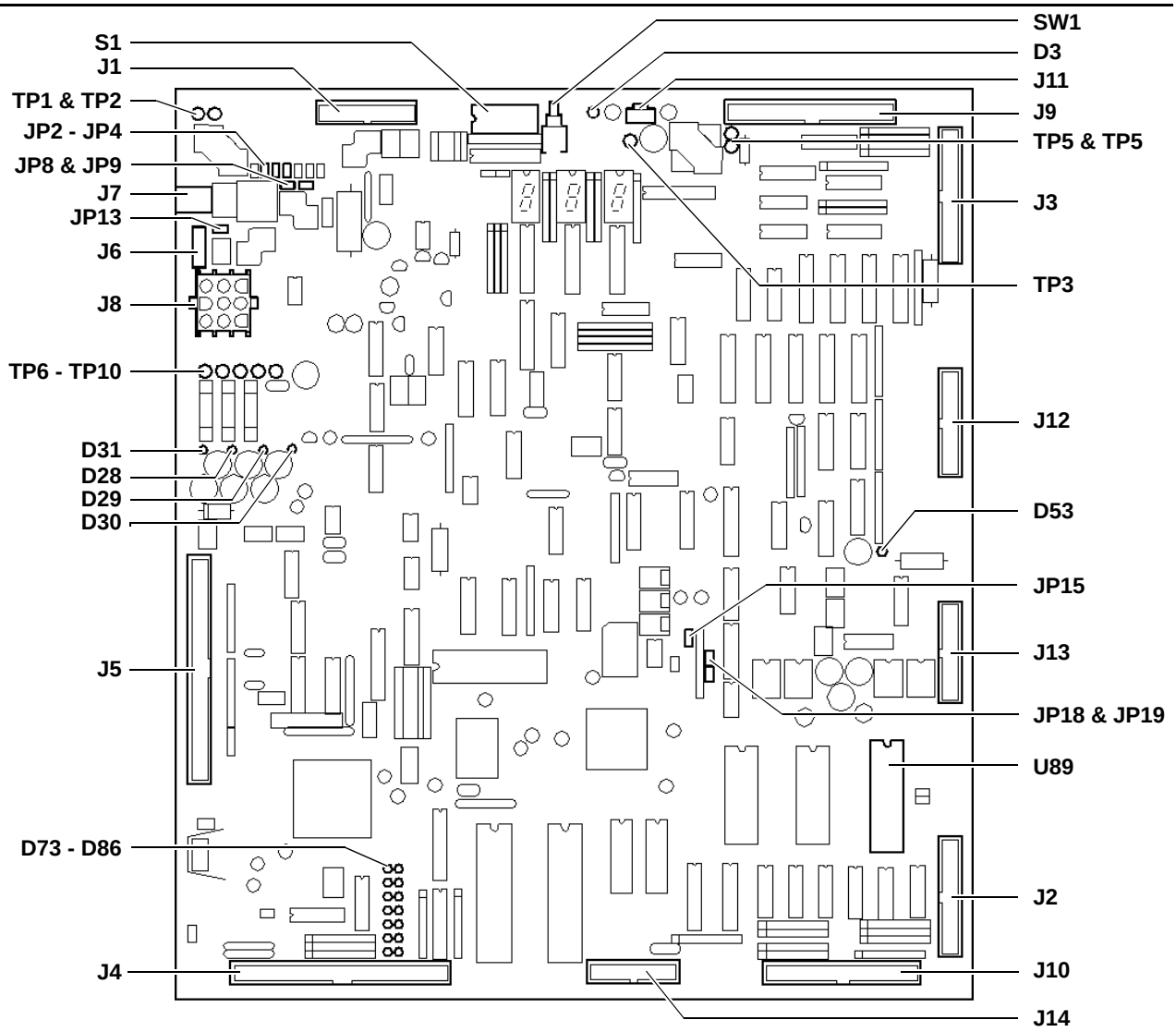
3. Check that the board has the correct firmware installed (see Table 5.12 and Figure 5.41).

Table 5.12 Inkjet controller board firmware, 5000 series printers

Printer	**Device**	**Version**	**Part Number[1]**
5120	U89	V1.63	0188515-101
Early 5240	U89	V3.46	0179759-101
Current 5240	U89	V4.04 or higher	0188560-001
5122	U89	V5.02 or higher	0188265-001

1. If the version number is higher than the one listed, contact technical support for the current firmware part number.

Figure 5.41 Inkjet controller board layout

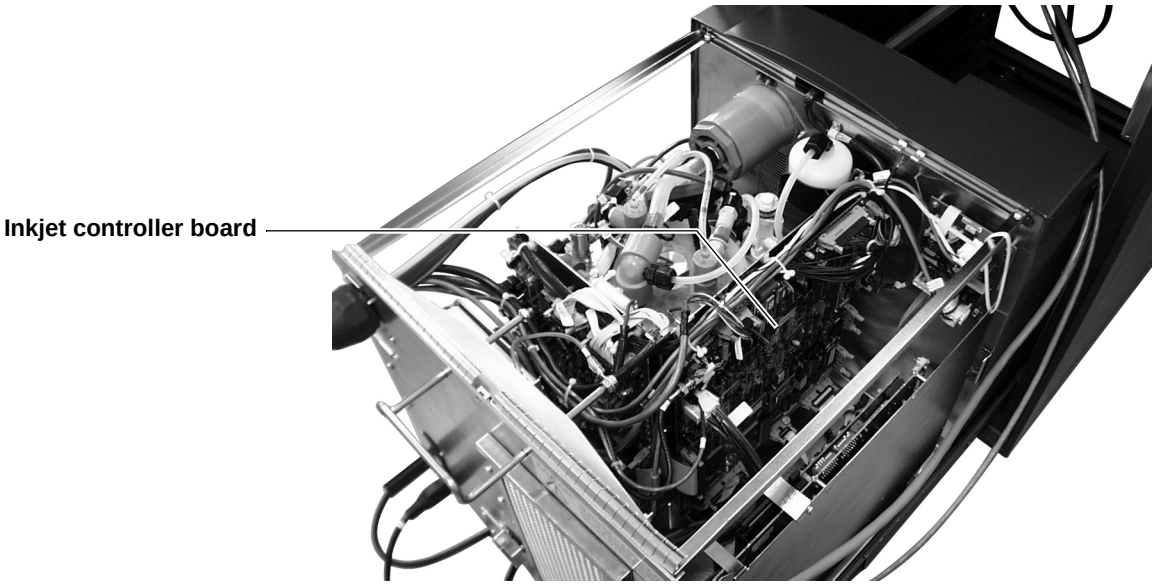


IJC Board Replacement

Use the following procedure to replace the Inkjet Controller board:

1. Locate the inkjet controller board on the right side of the fluid supply housing facing the DS main output board (see Figure 5.42).

Figure 5.42 Inkjet controller board location, 5122



2. Remove the back panel connectors.
3. Put the DS main board support bracket in its maintenance position.
4. Check that the replacement board is properly configured (see “IJC Board Configuration”).
5. Disconnect all cables; it should have the following cables:
   - Eight ribbon cables
   - Two plugs
   - One coaxial cable (stim drive).

Note: If the K4K option is installed, there is one more cable connecting the Inkjet Controller board to the K4K output board.

6. Remove the eight small (#1 Phillips) screws from standoffs that are securing the board to the fluid supply housing.

Hint: A small Reed-Prince screwdriver works well.

7. Squeeze the tab (plastic barb) in the center of the board, and remove the board.
8. Check the configuration of the replacement board before installing it.
9. Position the replacement board over the plastic barb, press down to snap it into position, then secure the board with eight screws.
10. Connect all cables (9 or 10).
11. Place the DS support bracket in the upright position.

12. Turn on the printer to run powerup diagnostics and check the board.
13. Using Diagnostics, set the following parameter values:
    - Current printer time and date
    - Serial number for the new Inkjet Controller board
    - Ink fill amount (the number appearing on the float switch)
    - Printhead phase (from the printhead label)
    - Printhead voltage (from the printhead label)
    - Cue distance
    - Printhead height
    - Print mode
    - Cue mode
    - Cue delay
    - Substrate length
    - Cue error.

    See Chapter 2 for details on setting these parameters.

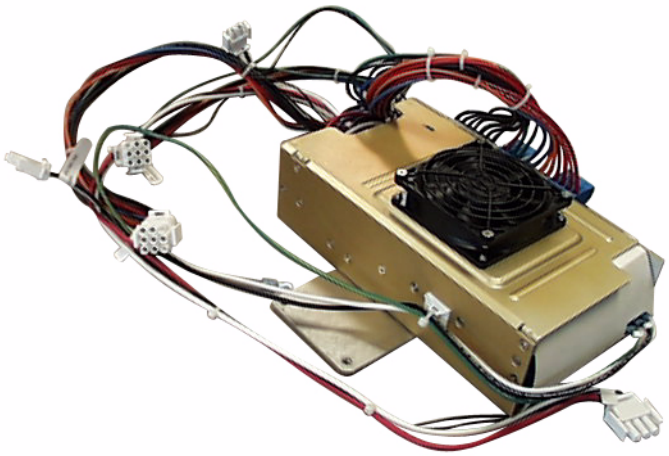
Low Voltage Power Supply

The Low Voltage Power Supply (LVPS) is a component of all 5000 series printers, but its FRU number is printer specific (see Table 5.13 and Figure 5.44).

Table 5.13 Low voltage power supply FRUs

Printer	FRU Number	Description
5120	0180087	POWER SUPPLY-LOW VOLTAGE (FRU)
Early 5240		
Current 5240 and 5122	P0182426	POWER SUPPLY-LOW VOLTAGE (5240N 5122) (FRU)
	P0188157	

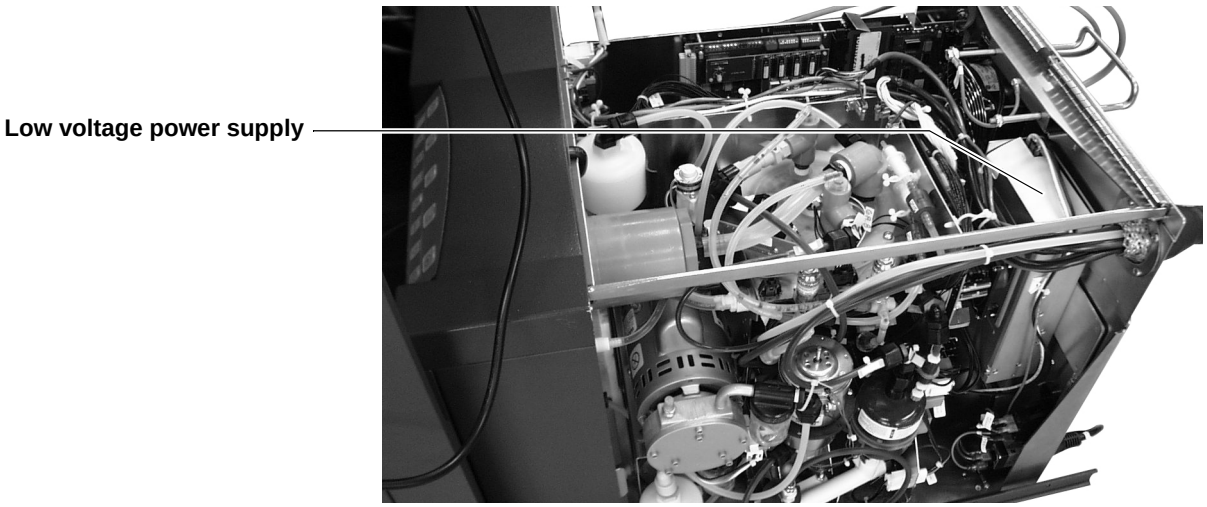
Figure 5.43 Low voltage power supply (P0182426)



Use the following procedure to replace the low voltage power supply:

1. Locate the LVPS inside the printer enclosure on the back of the printer rear panel (see Figure 5.44).

Figure 5.44 Low voltage power supply location, 5122



2. Disconnect the following cables:
   - DS main board connector J9 (0184759)
   - IJC board J8 (wiring)
   - ACHV supply board J8 (0182723)
   - ACHV supply board J9 (wiring)

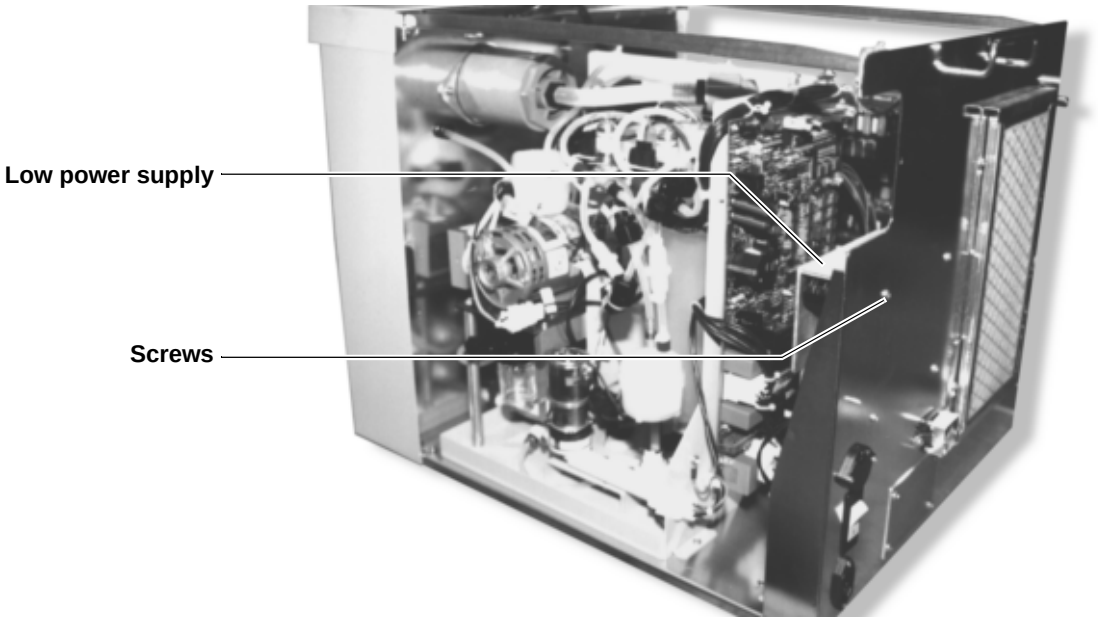
Current 5240 and 5122 only

   - Heater controller board J2 (0182430)
   - Grounding wire.

     This wire runs under the circuit breaker.

3. Remove the four screws that secure the LVPS and its mounting plate to the back panel (see Figure 5.45).

Figure 5.45 Low voltage power supply removal



4. Remove the assembly consisting of the LVPS, mounting plate, and cable harness.

5. Disconnect the discrete wiring from the terminal block mounted on the mounting plate. Table 5.14 lists the low voltage power supply wiring.

Table 5.14 Low voltage power supply wiring

Voltage	Positive Terminal	Negative Terminal	Valve
5 VDC	RT1	RT2	5.2 VDC ± 2%
+12 VDC	RT8	RT7	12 VDC ± 3%
-12 VDC	RT5	RT6	-12 VDC ± 3%
24 VDC	RT3	RT4	25.0 VDC ± 4%

6. Secure the replacement power supply to the rear panel using four screws.

7. Reconnect the cable to J9 on the DS main board.
8. Reconnect the cables to connectors J8 and J9 on the ACHV supply board.
9. Reconnect the cable to connector J8 on the IJC board.
10. Reattach the ground screw and wire so that the lock washer is positioned between the bottom of the printer enclosure and the ring terminal.

Operator Panel

The operator panel assembly is a component of all 5000 series printers, but the FRU is printer color specific (see Table 5.15).

Table 5.15 Operator panel FRUs

Printer	FRU Number	Description
5120 and early 5240	0178578	OPERATOR PANEL ASSEMBLY
Current 5240 and 5122	0187892	OPERATOR PANEL ASSEMBLY DARK GRAY

Figure 5.46 Operator panel, light gray (0178578)

Use the following procedure to replace the operator panel:

1. Locate the operator panel on top of the printer enclosure above the fluid compartment (see Figure 5.47).
2. Locate the operator panel on the top front of the printer enclosure.
3. Disconnect the cable (0177496 or 0182731) running to J3 on the Inkjet Controller board.

   Access the cable connection inside the fluid container compartment just above the ink bottles.
4. Loosen the four 11/32 hex nuts securing the panel.

   Access the nuts from inside the fluid container compartment.
5. Remove the panel (slide it straight up).
6. Mount the replacement panel and tighten all four nuts.

7. Reconnect the cable to the operator panel.

Figure 5.47 Operator panel location, 5122

Printer Foot

Four threaded, rubber printer feet (0187298) are used on all 5000 series printers (see Figure 5.48). An individual foot is available as a FRU to replace a printer foot that is damaged or lost.

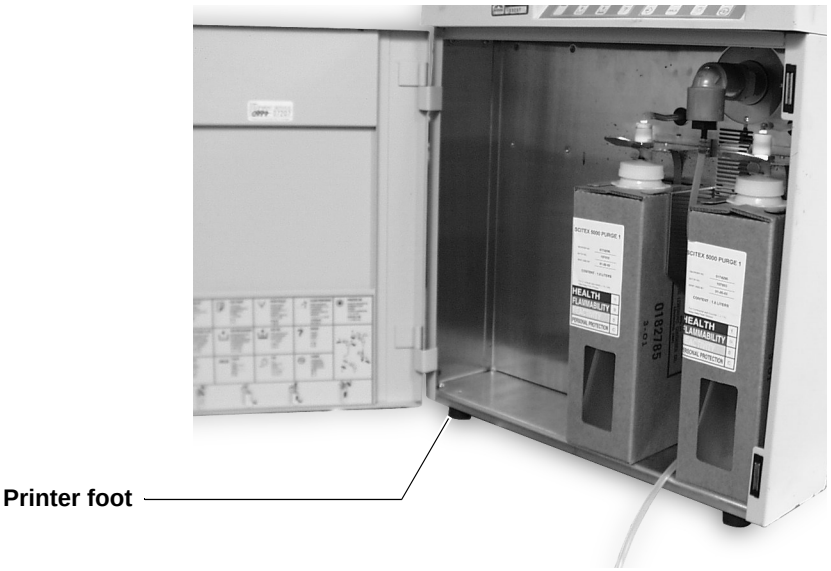
Figure 5.48 Printer foot (0187298)

Use the following procedure to replace a printer foot:

1. Locate the foot under the printer (see Figure 5.49).
2. Elevate the printer enough to access the foot. With a stubby screwdriver, the printer only has to be lifted about five inches (13 cm).

   If the printer is on a roll-around base or in a printing system enclosure, the screws securing the printer go through the feet.
3. Remove the screw securing the foot to the printer. Retain the screw.
4. Install the replacement foot using the same screw.

Figure 5.49 Printer foot location, 5122 printer

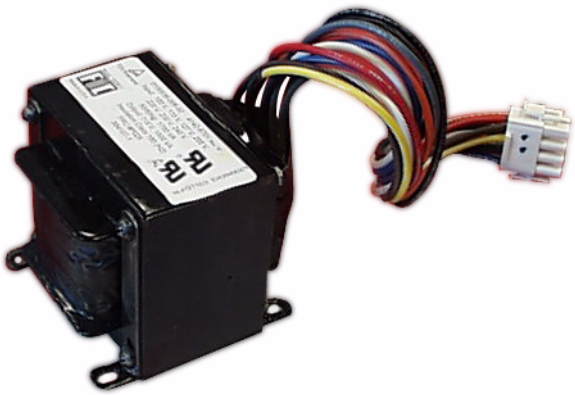


Transformer

5120 and 5240 Only

The transformer (0178586) is used in the 5120 and 5240 printers (see Figure 5.50).

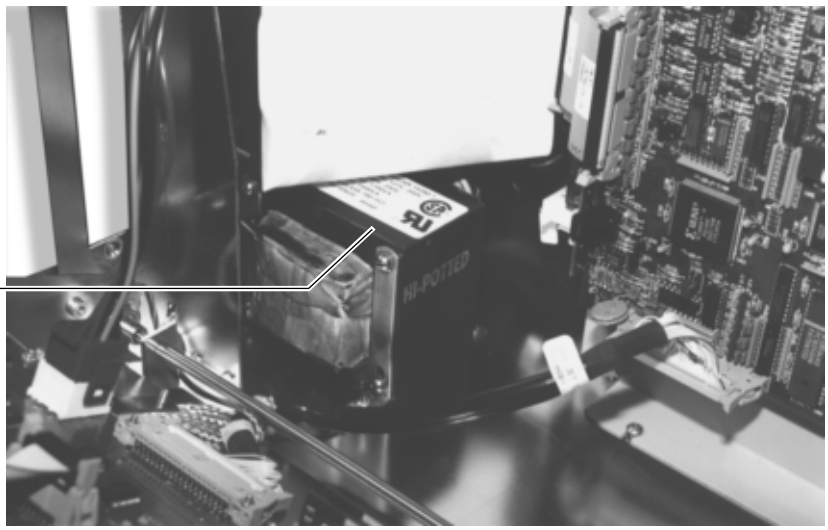
Figure 5.50 Transformer assembly (0178586)



Use the following procedure to replace the transformer:

1. Locate the transformer on the base below the fans (see Figure 5.51).

Figure 5.51 Transformer location, early 5240



2. Remove the air filter (see “Air Filter”) and fans (see “Fans”)
3. Disconnect the transformer assembly cable from connector J11 on the ACHV supply board.
4. Disconnect the ground wire from the transformer. Leave the ground wire attached to the DS main board.
5. Remove the four screws securing the transformer to the base.
6. Remove the transformer assembly.
7. Replace the transformer by reversing the removal procedure.

Umbilicals

Umbilical FRUs are differentiated by length and type of printer (see Table 5.16).

Umbilicals 0178594 and 0178595 require IJC firmware U89 V1.94 included with the umbilical. The firmware upgrade is required for the angled-printing capability. The modified umbilical can be recognized by smaller positive air tubes (#4) with a 'Y' connector. The split tubes were the catcher return line (#3). Reference technical hint #03097.000.

The procedure in this section describes the 24-ft. 5122 umbilical (see Figure 5.52).

Table 5.16 Umbilical lengths and part numbers

Part Number	Printer	Length	Description
P0178592	5120	12.0-ft (3.7 m)	UMBILICAL/PH HOUSING 120-12 FT
P0178593		24.0-ft (7.3 m)	UMBILICAL/PH HOUSING 120-24 FT
P0178594	Early 5240	12-ft	UMBILICAL/PH HOUSING 240-12 FT
P0178595		24-ft	UMBILICAL/PH HOUSING 240-24 FT
P0182428	Current 5240	12-ft	UMBILICAL / PH HOUSING- (240N) 12' FRU
P0182429		24-ft	UMBILICAL / PH HOUSING- (240N) 24' FRU
P0188038	5122	12-ft	UMBILICAL-2", 120 DPI, 12 FT. ASSY (FRU)
P0188041		24-ft	UMBILICAL-2", 120 DPI, 24 FT. ASSY (FRU)

Figure 5.52 Umbilical, 24-ft. current 5240 (P0182429)

Use the following procedure to replace the umbilical:

1. Remove the printhead covers (see "Printhead Covers").
2. Isolate the printhead (see Appendix B, "Shutdown and Recovery").

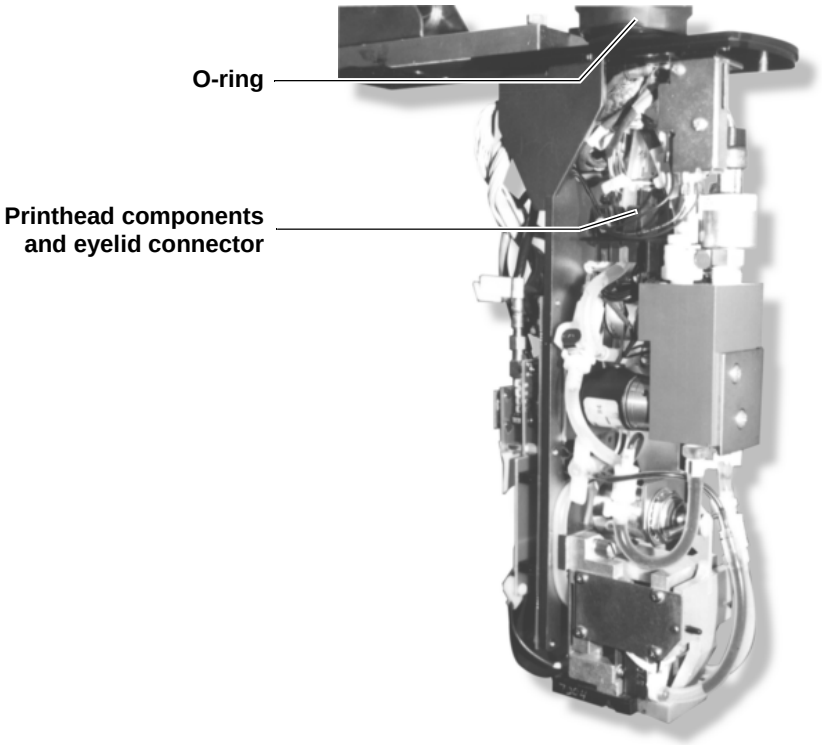
   Make sure the printer is powered off before starting this procedure (The green indicator above [PRINTER ON] should not be lit).

3. Remove the eyelid (see the appropriate section for the specific printhead in “Eyelid Assembly”).

4. Remove the printhead (see the *Replacement Instructions* shipped with the printhead).

5. Disconnect the five electrical connectors from the printhead components and eyelid connector housing mounted on the printhead frame (see Figure 5.53).

Figure 5.53 Printhead components and eyelid connector, 5120



6. Remove the two screws securing the printhead manifold to the printhead housing.

7. Disconnect the four tubes on the printhead housing that connect to the umbilical.

8. Remove the four screws securing the braided shield to the umbilical.

9. Loosen the plastic O-ring securing the umbilical to the printhead housing by twisting the O-ring; remove the printhead housing.

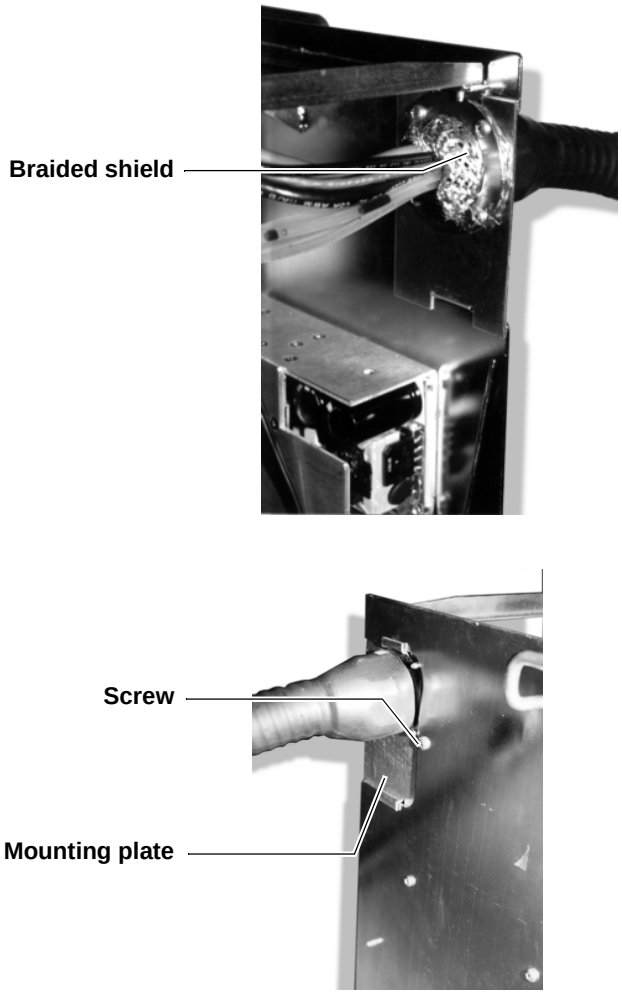
10. Disconnect the three shielded spades (J1 and J3 from the ACHV assembly PCB and J2 from the IJC assembly PCB) from 3 connectors on the fluid supply housing, above the ACHV assembly PCB.

11. Disconnect the three cables from connectors J1, J6, and J7 on the IJC assembly PCB.

12. Disconnect the two cables from connectors J2 and J4 on the ACHV assembly PCB.

13. Disconnect the following fittings (tubing nuts):
    a. #1, ink supply tube, connected to the main filter assembly
    b. #3, catcher return line
    c. #4, positive air tube, connected to the positive air filter.
14. Remove the vacuum regulator filter from the vacuum regulator bracket.
15. Unscrew the tubing nut from the #2, ink return line, connected to the ink tank.
16. Remove the screw that secures the mounting plate and the braided shield to the printer rear panel.
17. Remove the screw securing the umbilical mounting plate to the printer rear panel (see Figure 5.54).

Figure 5.54 Umbilical mounting plate, early 5240



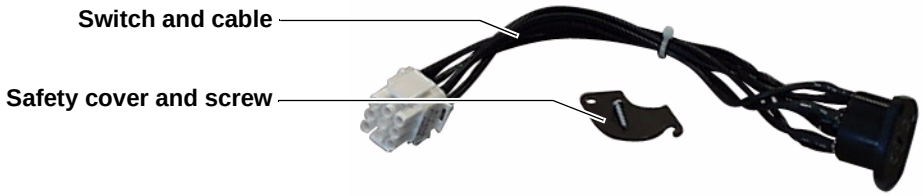
18. Remove the mounting plate and umbilical.
19. To install the replacement umbilical, secure the umbilical mounting plate to the printer rear panel with one screw.
20. Route the fluid and electrical lines within the printer.
21. Connect the following cables:
    - Inkjet controller board - J1, J6, and J7
    - ACHV supply board - J1 and J2
    - Three shielded spade connectors on the fluid supply housing (ACHV supply board and inkjet controller board).
22. Connect the following fluid lines:
    - #1 - Ink supply
    - #2 - Ink return line
    - #3 - Catcher return line
    - #4 - Positive air.
23. Install the vacuum regulator filter.
24. Secure the printhead housing to the umbilical by tightening the plastic O-ring at the umbilical to printhead housing connection.
25. Assemble the braided shield on the umbilical and secure the braided shield to the printhead housing with four screws.
26. Connect the four tubes on the printhead housing to their connections on the umbilical.
27. Secure the printhead manifold to the printhead housing with two screws.
28. Connect the four electrical connectors to the printhead components connector housing and the electrical connector to the eyelid connector housing, both mounted to the printhead manifold.
29. Install the printhead assembly on the printhead housing.
30. Install the eyelid assembly.

Voltage Selector Switch

5120 and 5240 Only

The voltage selector switch assembly (0178536) is used in the 5120 and 5240 printers; the 5122 does not have this switch (see Figure 5.55).

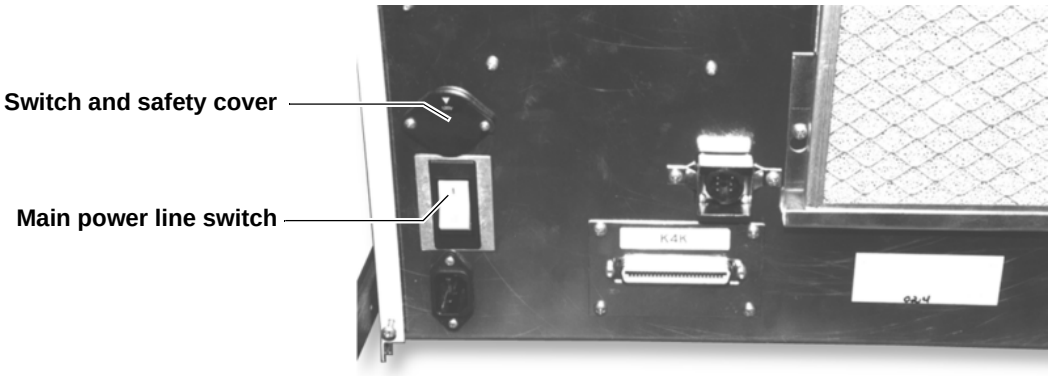
Figure 5.55 Voltage selector switch assembly



Use the following procedure to replace the voltage selector switch:

1. Locate the switch in the lower-left section of the printer rear panel, directly above the circuit breaker and main power line switch (see Figure 5.56).

Figure 5.56 Voltage selector switch location, 5240



2. Disconnect the cable from connector J10 on the ACHV supply board.
3. Remove the two screws securing the safety cover to the voltage selector switch.
4. Remove the fuse.
5. Remove the two screws securing the voltage selector switch assembly to the back of the printer rear panel; remove the voltage selector switch assembly.
6. Secure the replacement switch to the back side of the printer rear panel with two screws.
7. Set the proper voltage (see Chapter 3, “Printer Installation” in the *Installation Guide*).
8. Install the fuse.
9. Secure the safety cover with two screws.

10. Connect the cable to J10 on the ACHV supply board.

Data System Components

This section describes the FRUs listed in Table 5.17.

Table 5.17 Data system FRUs

Product	FRU Number	Description	See Heading:
Current 5240 and 5122	P0179505	PCB, DS MAIN/OUPUT ASSY PKGD	“Data System Main Board”
5240	P0179584	PCB, DS MAIN/OUTPUT HIMEN PKGD	“Data System Main Board”
5120	P0179506	PCB, DS OUTPUT ASSY PKGD	“Data System Output Board”
5120 and 5240	0178530	CABLE, ETHERNET TO DS MAIN	“Ethernet to DS Main Cable”
5120 and 5240	0178559	TRANSCEIVER-ETHERNET	“Ethernet Transceiver”
5120	0182118	FLASH CARD A 2MB V1.05.09 STD PKGD	“Flashcards”
All	0182219	FLASH CARD B 32MB BLANK PKGD	“Flashcards”
5120	0182119	FLASH CARD B VER1 20MB 5120 US FONTS PKGD	“Flashcards”
5120	0182120	FLASH CARD B VER1 20MB 5120 US FONTS PKGD	“Flashcards”
5240	0182121	FLASH CARD B VER1 20MB 524 KANJI FONTS PKGD	“Flashcards”
5240	0182122	FLASH CARD B VER1 20MB 5240EXT KANJI FONTS PKGD	“Flashcards”
Current 5240 and 5122	0181327	FLASHCARD A-32MB, V2.30 ENET US FONTS, PKDG	“Flashcards”
Current 5240 and 5122	0179654	FLASHCARD B 32MBV2.30 STD US FONTS	“Flashcards”
Current 5240	0180279	SOFTWARE-V1.04.11 FLASH W/ENET, PKGD	“Flashcards”
5120 and 5240	P0177611	K4K BOARD ASSY	“K4K Assembly and Motherboard”
5120 and 5240	0178597	PCB, K4K MOTHERBOARD	“K4K Assembly and Motherboard”
5120 and 5240	0178634	CABLE, K4K TO IJC FRU	“K4K to IJC Cable”
5120 and 5240	0178633	CABLE, K4K TO K4K MOTHERBOARD	“K4K to K4K Motherboard Cable”
All	0178635	PCB, SEVEN SEGMENT ASSY	“Seven Segment Display”

Data System Cables

This section describes the following cables:

- Ethernet to DS main cable (0178530)
- K4K to IJC cable (0178634)
- K4K to K4K motherboard cable (0178633).

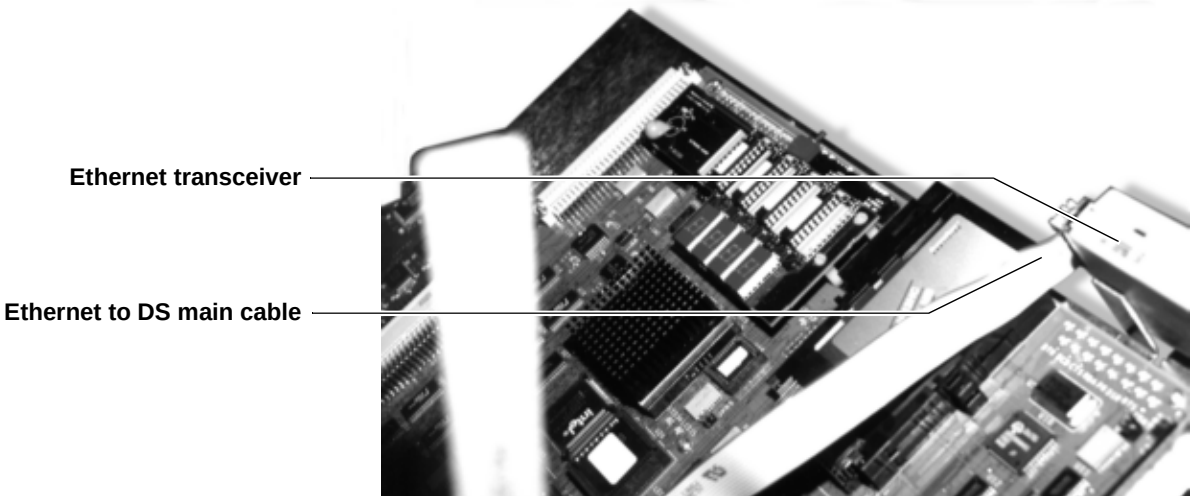
Ethernet to DS Main Cable

The Ethernet transceiver to data system main board cable (0178530) connects the 16-pin connector on the back of the 10 Base 2, coaxial micro transceiver to J5 on the DS main board (see Figure 5.57). This cable has manufacturing part number 0175793; it is required only if the Ethernet option is installed (see “Ethernet Transceiver”).

Figure 5.57 Ethernet to DS main cable (0178530)

Figure 5.58 shows the cable location and the connection to the transceiver.

Figure 5.58 Ethernet to DS main cable location



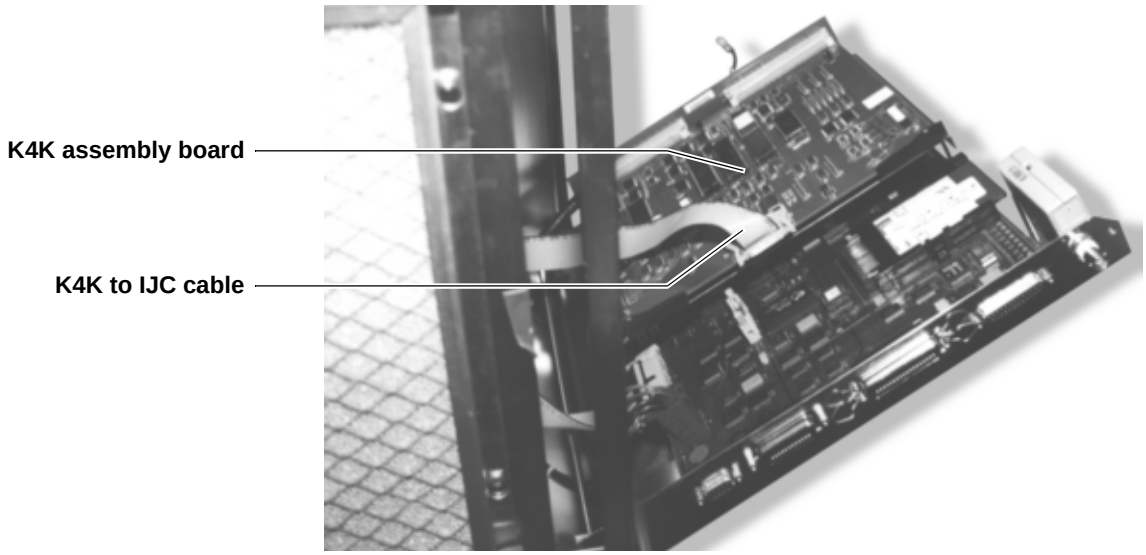
K4K to IJC Cable

The K4K assembly board to inkjet controller board cable (0178634) connects J1 on the K4K assembly to J2 on the IJC board (see Figure 5.59). This cable has manufacturing part number 0175796.

Figure 5.59 K4K to IJC cable (0178634)

Figure 5.60 shows the cable location and the connector on the K4K assembly.

Figure 5.60 K4K to IJC cable location



K4K to K4K Motherboard Cable

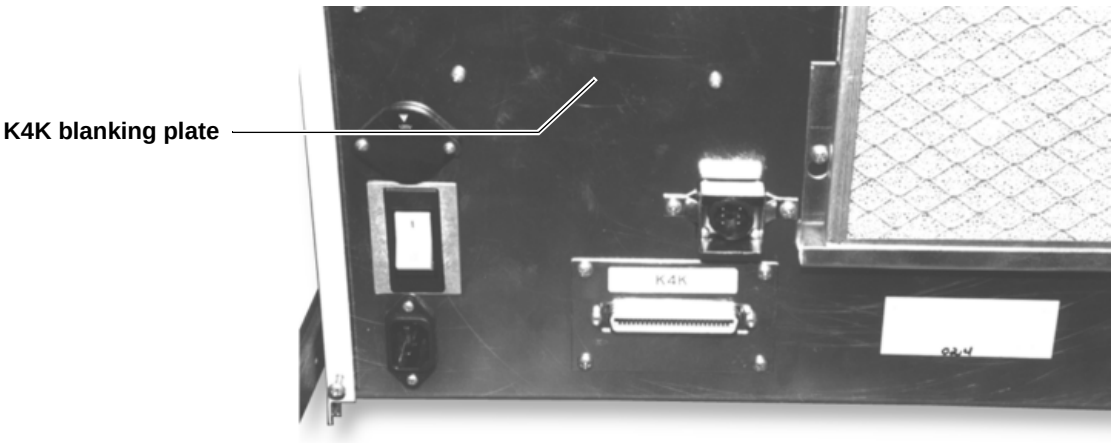
The K4K assembly board to K4K motherboard cable (0178633) connects the cutout in the printer back panel to J1 on the K4K motherboard (see Figure 5.61). This cable has manufacturing part number 0175795.

Figure 5.61 K4K to K4K motherboard cable (0178633)

Use the following procedure to replace this cable:

1. Locate the blanking plate on the printer back panel where the K4K connector is to be installed (see Figure 5.62).
2. Remove the two screws securing the plate to the back panel. Retain the screws.
3. Position the K4K connector plate in the back panel opening and secure it with the four screws.
4. Route the cable to the K4K motherboard.
5. Plug the 64-pin ribbon cable connector into J1 on the K4K motherboard.
6. Connect the external K4K cable (0118076) to the connector in the back panel. Connect the other end of this cable to the data source (binding line controller).

Figure 5.62 K4K connector location, printer back panel



Data System Main Board

The Data System (DS) main board FRU (see Table 5.18) is an assembly that includes the DS Output board (see Figure 5.63). The DS main board is available in standard (32-MB) and high-memory (128-MB) configurations. Older, low-memory (8-MB) boards are no longer available and must be replaced with the standard board. The DS output board is also available as a separate FRU (see "Data System Output Board").

Table 5.18 Data system main board FRUs

Printer	FRU Number	Board Number
All	P0179505	0179583
All (see note 1)	P0179584	0182232

1. The high-memory (128-MB) board is required only for applications that download double-byte fonts, but is compatible with all printers.

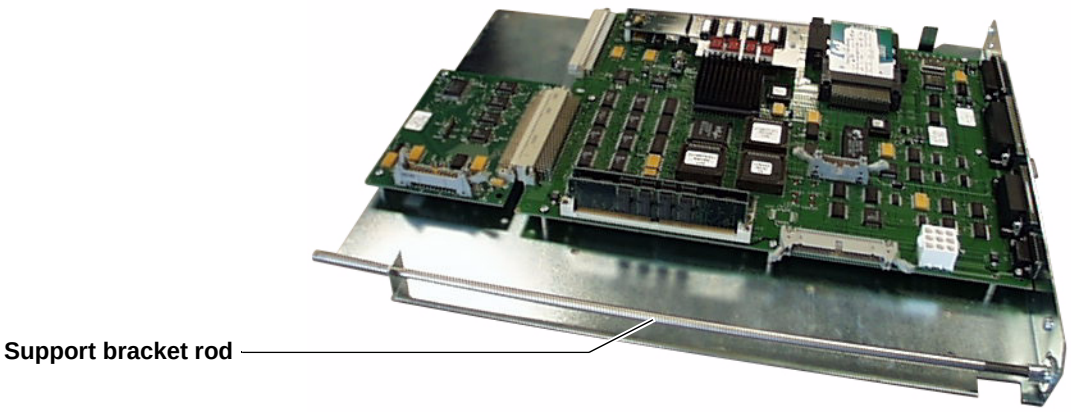
Caution: All memory on the DS main and DS output boards is erased when the board assembly is removed.

Replacing the DS main board consists of the following procedures:

- DS main configuration
- DS main replacement.

Note: If the failed DS main is the same model as the replacement FRU, configure the replacement board to match the failed board.

Figure 5.63 Data system main board, current 5240 (P0179584)



DS Main Configuration

Use the following procedure to configure a replacement DS main board:

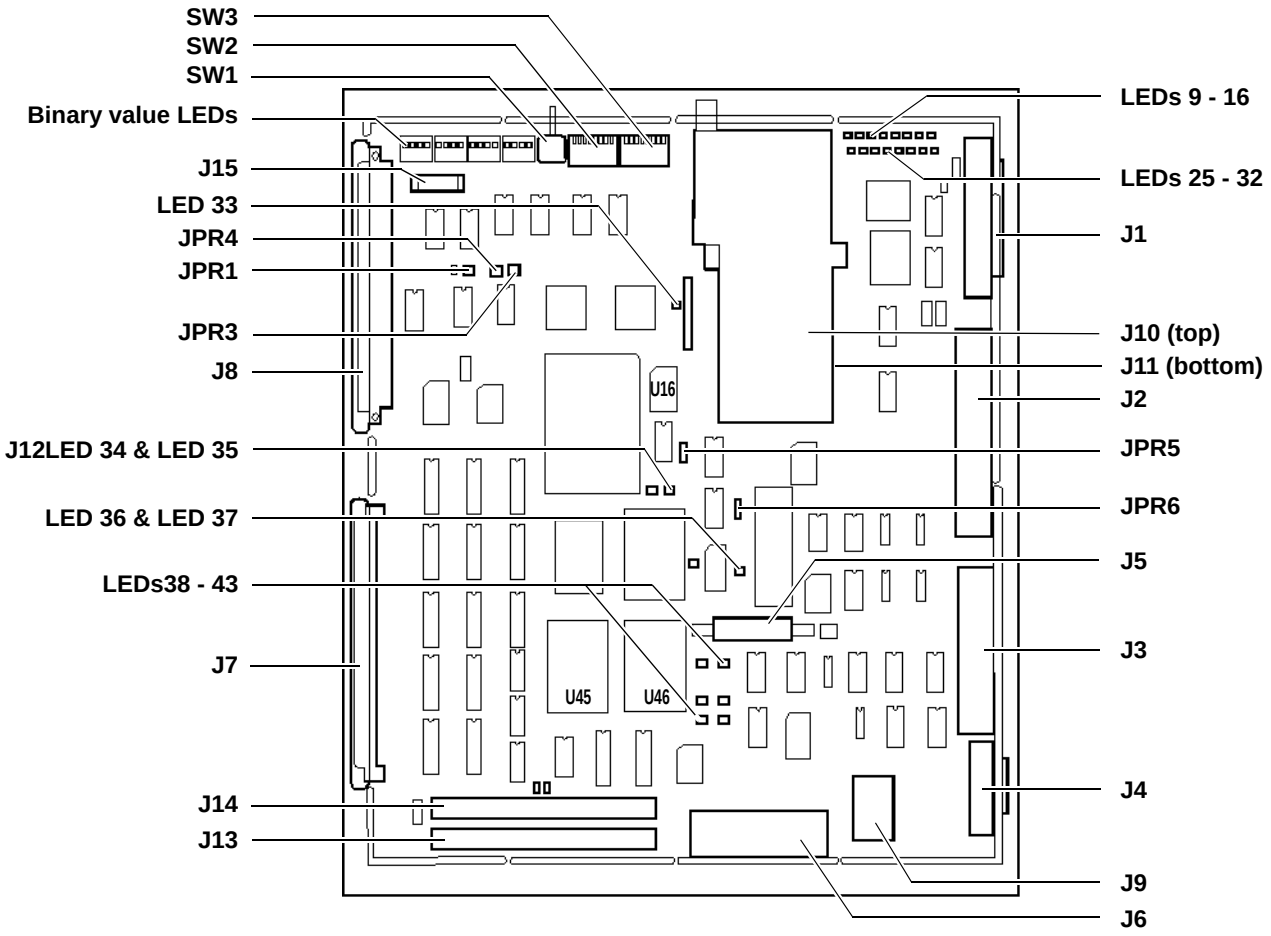
1. Check all jumpers and verify that the correct shunts are installed (see Table 5.16 and Figure 5.64).

   Jumpers JPR1, JPR3, and JPR4 are near connector J8. JPR2 is near J1. JPR5 is near device U15. JPR6 is near U31.

Table 5.19 DS main jumper settings

Jumper	P0179505	P0179584	Function
JPR1	ON	ON	ON = Loads from board memory OFF = Loads from external source
JPR2	ON	ON	Standard RS-232 cable used
JPR3	Not installed		Reserved (for use with emulator)
JPR4			Reserved (for use with emulator)
JPR5			Reserved (emulate test at address $0)
JPR6			Reserved (testing at 20 MHz)

Figure 5.64 DS main board layout



2. Set the switches as required by the printer configuration (see Table 5.16). To check the current switch settings, use diagnostics (see "DIP Switch Test" on page 1-28). Switch banks SW2 and SW3 are near connectors J10 and J11 (the flashcard slots).

Note: In Table 5.20, **X** = setting has no effect, **ON** = closed, and **OFF** = open.

Table 5.20 DS main switch settings

SW2								SW3								Function
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
ON																Serial data - 8 bits
OFF																Serial data - 7 bits
	X	OFF														Serial data - No parity
	OFF	ON														Serial data - Odd parity
	ON	ON														Serial data - Even parity
			ON	ON												Serial data - 57.6 KB
			OFF	ON												Serial data - 38.4 KB
			OFF	OFF												Serial data - 19.2 KB
			OFF	OFF												Serial data - 9.6 KB
					OFF											Execute factory installed software
					ON											Execute downloaded software
						OFF										IJPDS input format
						ON										NIC input format
							OFF									Use saved switch settings
							ON									Use DIP switch settings
								OFF								5000 emulation mode OFF
								ON								5000 emulation mode ON
									OFF	OFF	OFF	OFF				DS8 RIP2 / Printer 16
									ON	OFF	OFF	OFF				DS8 RIP1 / Printer 15
									OFF	ON	OFF	OFF				DS7 RIP2 / Printer 14
									ON	ON	OFF	OFF				DS7 RIP1 / Printer 13
									OFF	OFF	ON	OFF				DS6 RIP2 / Printer 12
									ON	OFF	ON	OFF				DS6 RIP1 / Printer 11
									OFF	ON	ON	OFF				DS5 RIP2 / Printer 10
									ON	ON	ON	OFF				DS5 RIP1 / Printer 9
									OFF	OFF	OFF	ON				DS4 RIP2 / Printer 8
									ON	OFF	OFF	ON				DS4 RIP1 / Printer 7
									OFF	ON	OFF	ON				DS3 RIP2 / Printer 6
									ON	ON	OFF	ON				DS3 RIP1 / Printer 5
									OFF	OFF	ON	ON				DS2 RIP2 / Printer 4
									ON	OFF	ON	ON				DS2 RIP1 / Printer 3
									OFF	ON	ON	ON				DS1 RIP2 / Printer 2
									ON	ON	ON	ON				DS1 RIP1 / Printer 1
													OFF	OFF		K4K data path
													OFF	ON		Centronics data path
													ON	ON		Ethernet data path
															OFF	Serial control
															ON	Ethernet control
Standard switch settings																
ON	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	X	X	X	X	OFF	ON	OFF	Centronics
ON	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	X	X	X	X	OFF	OFF	OFF	K4K
ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	(See Note [1])				ON	ON	ON	Ethernet

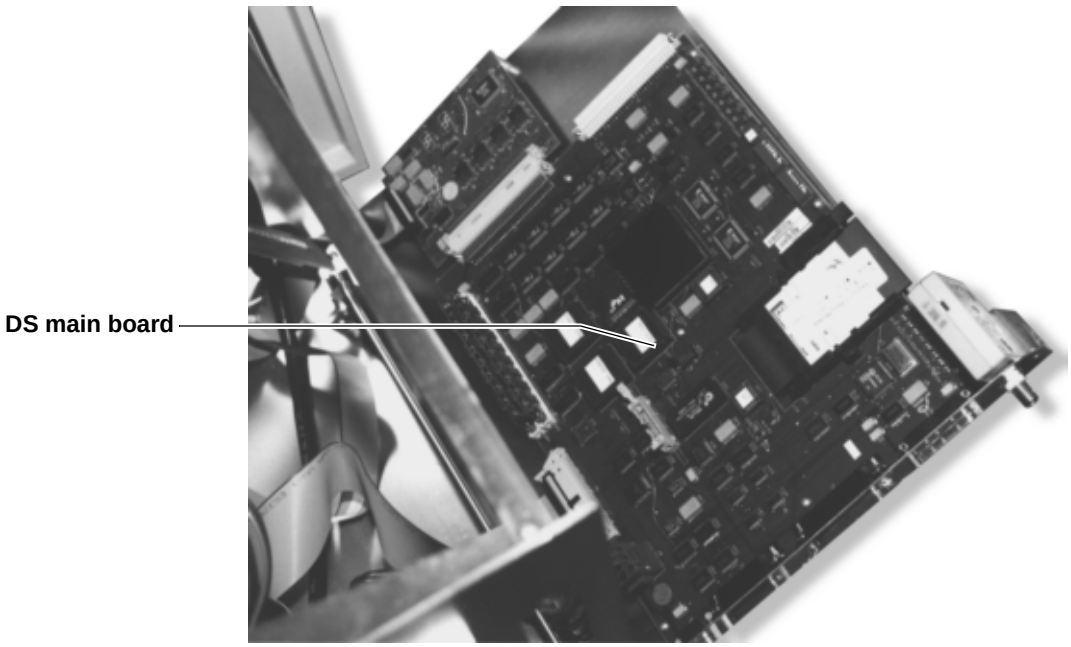
1. When Ethernet data is selected, the printer address must be set as shown in the main list for SW2-2 through SW2-5.

DS Main Replacement

Use the following procedure to replace the DS main board assembly:

1. Disconnect all cables from the connectors on the support bracket panel and put the bracket in the service access position (see “Support Bracket Positioning”).
2. If the K4K option is installed, remove it (see “K4K Assembly and Motherboard”), otherwise skip to Step 3.
3. Remove the screw securing the ground wire to the DS main board (near J4). Leave the ground wire attached to the printer chassis.

Figure 5.65 DS Main board location, 5240



4. Disconnect the cables from J6 and J9 on the DS main board.
5. Disconnect the cable from J2 on the DS output board.

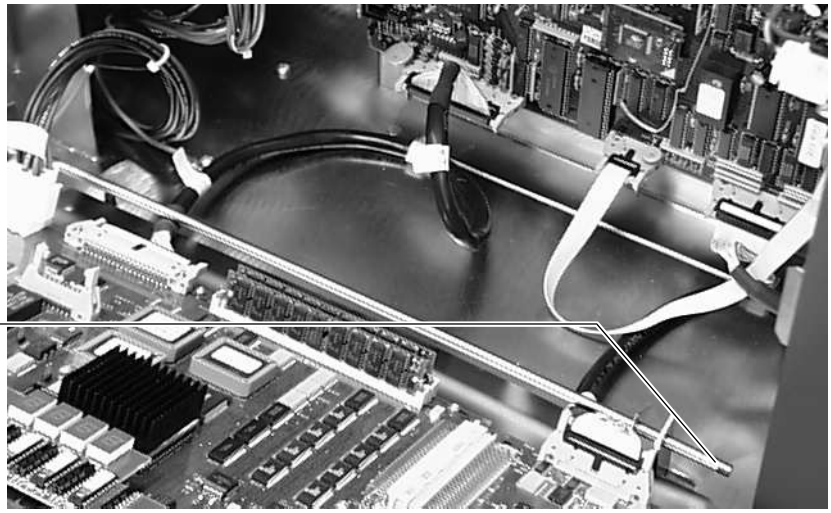
6. Using a pliers or channel locks to grip the flat end of the support bracket rod, turn the rod out of its threaded socket (see Figure 5.66).

7. Slide the rod out of the holes in the support bracket and remove the DS main assembly.

8. Replace the DS main assembly by reversing the removal procedure.

9. After installing the replacement DS main assembly, reset the data system clock (see “Set Date and Time” on page 1-23).

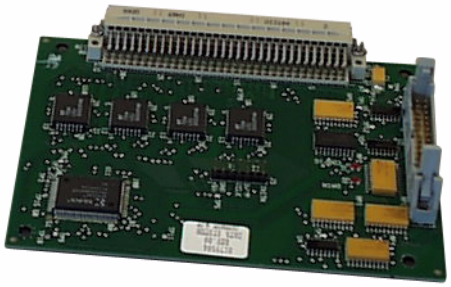
Figure 5.66 DS support bracket rod, 5122



Data System Output Board

The Data System (DS) output board FRU (P0179506) is used in all 5000 series printers. The same output board is used with both DS main boards (see “Data System Main Board”). The output board does not require configuration (the J3 debug connector is not intended for field use). The board layout is provided for general reference (see Figure 5.69).

Figure 5.67 DS output board (P0179506)



Use the following procedure to replace the output board:

1. Locate the output board on the support bracket near the front of the printer (see Figure 5.68).
2. Remove the two screws securing the output board to the support bracket (through standoffs).
3. Unplug the output board from J7 on the DS main board.
4. Replace the DS output board by reversing the removal procedure.

Figure 5.68 DS output board location

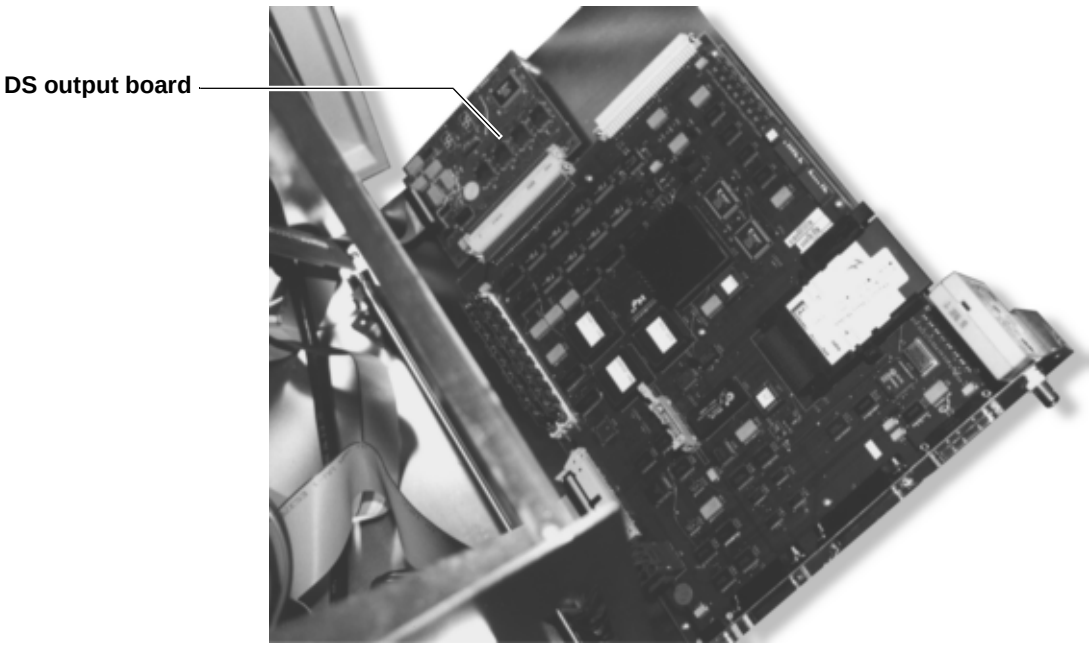
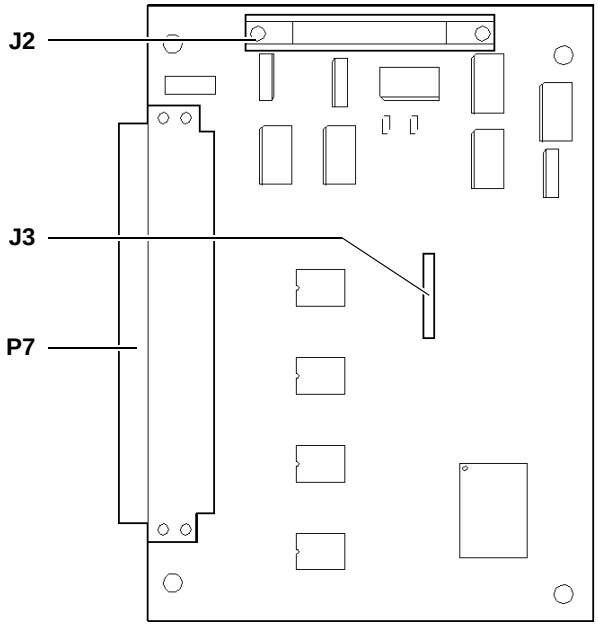


Figure 5.69 DS output board layout



Ethernet Transceiver

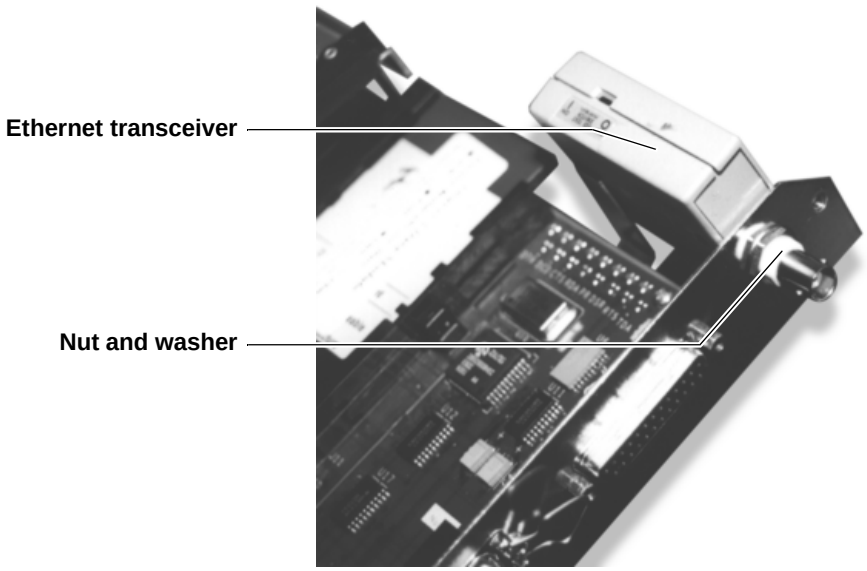
The Ethernet transceiver (0178559) is installed as part of the network option, which is available for all 5000 series printers. The same transceiver is used with both DS main boards (see “Data System Main Board”). The transceiver does not require configuration.

Figure 5.70 Ethernet transceiver (0178559)

Use the following procedure to replace the transceiver:

1. Locate the transceiver at the top of the support bracket (see Figure 5.71).
2. Disconnect the coaxial cable from the BNC connector on the transceiver.
3. Disconnect the ribbon cable from the rear connector on the transceiver.
4. Remove the hex nut and washer securing the transceiver to the support bracket.
5. Replace the transceiver by reversing the removal procedure.

Figure 5.71 Ethernet transceiver location



Flashcards

The flashcards installed in slots J10 and J11 on the DS main board store data system software and fonts in non-volatile memory. Flashcard FRUs are pre-loaded with specific software and fonts (see Table 5.21 and Figure 5.72). A blank card for font storage is also available. All flashcards are compatible with both DS main boards, but the Flashcard installed must contain software compatible with the printer. The description in Table 5.21 gives the primary application for each pre-loaded flashcard. Always check the current data station software version and the inkjet controller board firmware (see “Inkjet Controller Board”) before replacing a flashcard, but the following guidelines apply to flashcard replacement:

- 0179654 is the standard flashcard for the current 5240 and 5122
- 0182837 is the standard flashcard for printers using Ethernet
- If blank card 0182219 is installed, fonts must downloaded to it (see “Downloading Software”).
- As an alternative to replacing the flashcard, data system software can be downloaded to an installed flashcard, but this procedure requires printer DS software V2.10 or higher and Jetscape diagnostics V1.11 or higher.

Table 5.21 Flashcards FRUs, 5000 series printers

Printer	FRU Number	Description[1]
Current 5240 and 5122	0179654	B 32MB V2.30 STD US FONTS
Current 5240 and 5122	0181327	A 32MB V2.30 ENET US FONTS
5120	0182118	A 2MB V1.05.09 STD
5120	0182119	B VER1 20MB 5120 US FONTS
5120	0182120	B VER1 20MB 5120 US FONTS
5240	0182121	B VER1 20MB 524 KNAJI FONTS
5240	0182122	B VER1 20MB 5240EXT KANJI FONTS
All	0182219	B 32MB BLANK[2]

1. The word ‘flashcard’ and abbreviation ‘pkgd’ were omitted.
2. For font storage only, must be installed in J10.

Figure 5.72 32-MB flashcard (0179654), V2.30 and standard US fonts

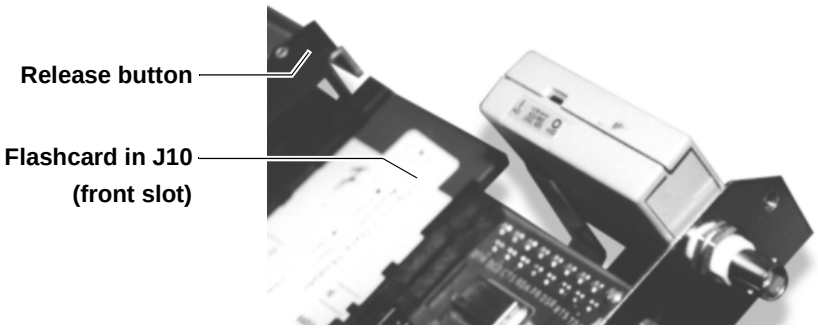
Use the following procedure to replace a flashcard:

1. Locate slots J10 and J11 on the DS main board (see Figure 5.73).

   J10 is the front slot; J11 is the rear slot.

2. Press the release button for the slot (next to J10 and J11) to pop out the flashcard.
3. Insert the new card in the slot until it clicks into place.
4. If you installed a blank card for font storage, download fonts to the card (see “Downloading Software”).

Figure 5.73 Flashcard location, DS main board



K4K Assembly and Motherboard

The K4K assembly is an option available for the 5120 and 5240 printers. Five K4K option components are FRUs (see Table 5.22).

Table 5.22 K4K option component FRUs

FRU Number	Description	See Heading:
0178633	CABLE, K4K TO K4K MOTHERBOARD	“K4K to K4K Motherboard Cable”
0118076	CABLE ASSY I/O-GPI EXT	“I/O to GPI Extension Cable” (See note [1])
0178634	CABLE, K4K TO IJC FRU	“K4K to IJC Cable”
P0177611	K4K BOARD ASSEMBLY	“K4K Assembly and Motherboard”
0178597	PCB, K4K MOTHERBOARD	

1. Used as the external cable that connects the K4K assembly to its data source.

The same assembly board and motherboard are used in both printers. Neither board requires configuration. The board layout is provided for general reference (see Figure 5.75). The motherboard layout is not provided.

Figure 5.74 K4K motherboard (0178597)

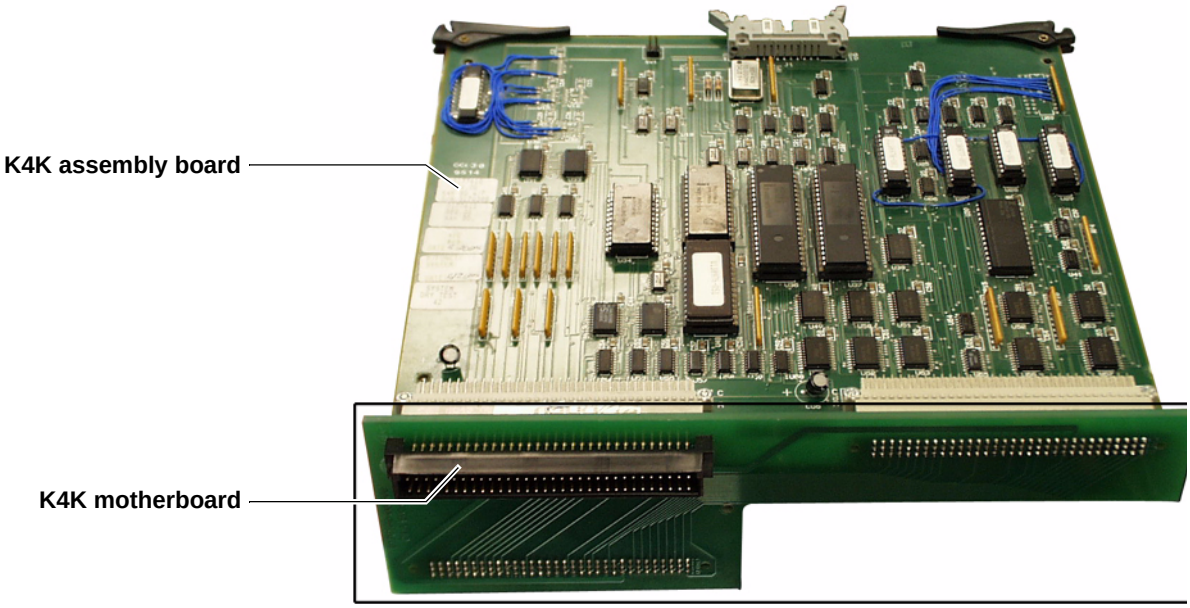
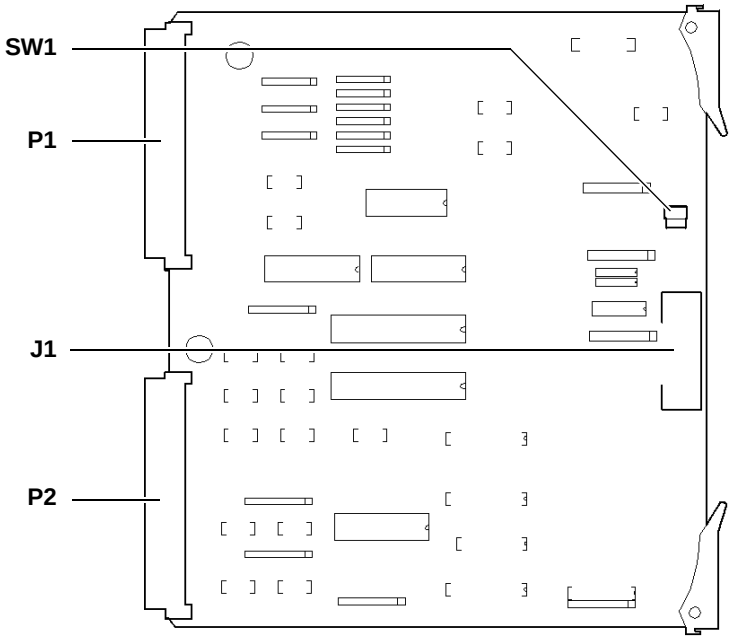


Figure 5.75 K4K assembly board layout



Use the following procedure to replace either the K4K assembly board or motherboard:

1. Locate the K4K assembly mounted on a bracket over the DS main board (see Figure 5.76).

1. Disconnect the cable from connector J1 on the assembly board.

2. Disconnect the cable from connector P1 on the motherboard.

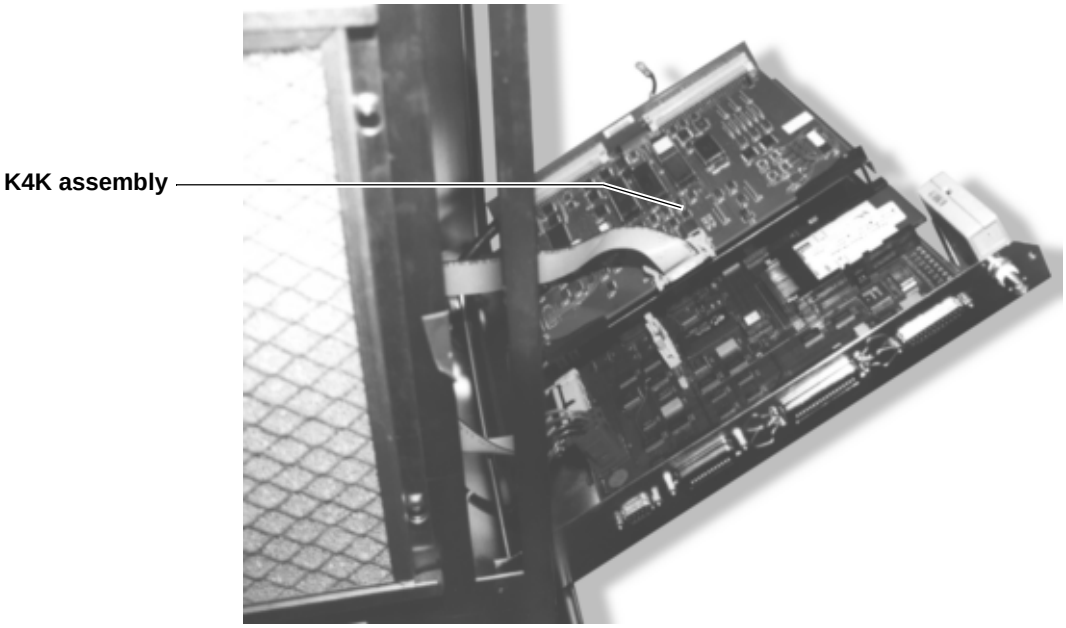
3. Remove the three screws and one plastic pin securing the K4K assembly board to its mounting bracket.

4. Unplug the motherboard from connectors P1 and P2 on the assembly board.

Caution: Before plugging the motherboard back into the assembly board, check that all the connector pins are properly aligned. Pressing the boards together with the pins out of alignment will bend pins and render the K4K assembly inoperative.

5. Replace the K4K assembly by reversing the removal procedure.

Figure 5.76 K4K assembly location



Seven Segment Display

The Seven Segment Display board (0178635) is part of the DS Main board assembly, but is available as a separate FRU (see Figure 5.77). The same seven segment display is used with both DS main boards (see “Data System Main Board”). The seven segment display does not require configuration. The board layout is provided for general reference (see Figure 5.78).

Figure 5.77 Seven segment display (0178635)

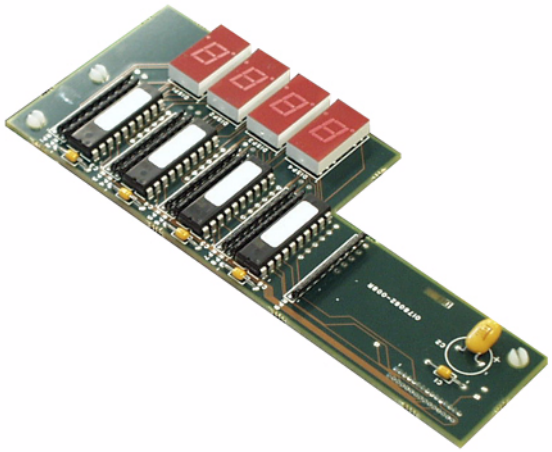
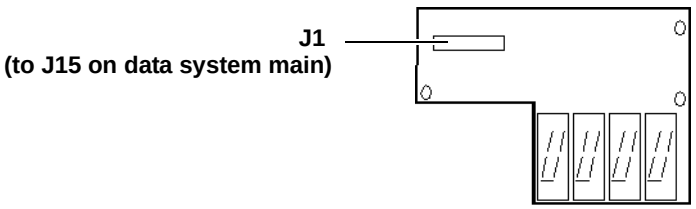


Figure 5.78 Seven segment display board layout

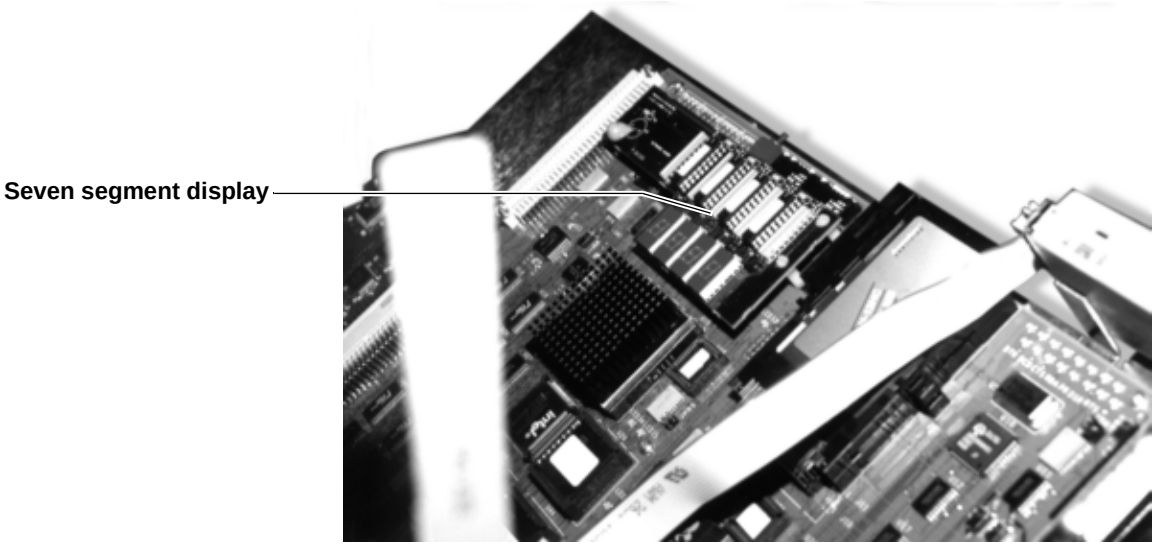


Use the following procedure to replace the seven segment display:

1. Locate the seven segment display board mounted on the DS main board (see Figure 5.79).
2. Pop open the three squeeze-release pins securing the display to the DS Main board and remove the display.

   Pinch the pins with a needle-nose pliers.

Figure 5.79 Seven segment display board location



Fluid System Components

This section describes the FRUs listed in Table 5.23.

Note: The angle print modification kit (0180233) is required for a 5240 built before February, 1997 (see technical hint #031097.000).

Table 5.23 Fluid system FRUs

Product	FRU Number	Description	See Heading:
5120 and early 5240	P0178643	AIR PUMP	"Air Pump"
Current 5240 and 5122	0188037	AIR PUMP (FRU)	"Air Pump"
All	0178532	VALVE, FILL	"Fill Valve"
	0178538	FLOAT SWITCH ASSEMBLY	"Float Switch"
	0178617	FLUID BYPASS ASSEMBLY	"Fluid Bypass Assembly"
	0178613	FILTER, FLUID INLINE	"Fluid Inline Filter"
Current 5240 and 5122	0188043	FILTER-IN-LINE.125D TBG 25u BARB, 10 EACH (FRU)	"Fluid Inline Filter"
All	0188036	FLUID SUPPLY (FRU)	"Fluid Supply Assembly"
	P0178533	FLUID SUPPY ASSY 5120/5240	"Fluid Supply Assembly"
	0178500	CABLE, FLUID SYSTEM AC	"Fluid System AC Cable"
	0178526	CABLE, FLUID SYSTEM DC	"Fluid System DC Cable"
Current 5240 and 5122	0182511	PCB INK HEATER (240N) W/VERSION 4.02 IJC FIRMWARE	"Heater Controller Board"
Current 5240	0182512	VALVE-CATCHER (240N)	"Thermistor"
5240 and 5122	0182430	CABLE-RIBBON (IJ-INK HEATER) (240N)	"Ink Heater Cable"
512 and early 5240	0186760	INK TANK ASSY (5120/5240) FRU	"Ink Tank"
Current 5240 and 5122	0186761	INK TANK ASSY (5240N) FRU	"Ink Tank"
All	0178645	JAR/FILTER ASSEMBLY	"Jar and Filter Assembly"
	0178611	FILTER ASSY, MAIN	"Main Filter Assembly"
	0178537	FITTING, MIST FILTER	"Mist Filter Fitting"
	0178541	MIST HOUSING ASSEMBLY	"Mist Filter Housing"
	0187283	MIST FILTER (4 PACK)	"Mist Filter"
	0178615	FILTER, POSITIVE AIR	"Positive Air Filter"
	0178534	POSITIVE AIR SWITCH ASSEMBLY	"Positive Air Switch"
	0183339	SENSOR-SPILL (FRU)	"Spill Sensor"
	0180235	STEPPER MOTOR ASSY FRU	"Stepper Motor"
	0181018	VACUUM ELBOW FRU	"Vacuum Elbow"
Current 5240 and 5122	P0182427	VACUUM PUMP (240N) FRU	"Vacuum Pump"
5120	P0178640	VACUUM PUMP FRU	"Vacuum Pump"
All	0181227	FILTER, VACUUM REGULATOR LARGE	"Vacuum Regulator Filter"
	0178499	VAC REGULATOR ASSEMBLY	"Vacuum Regulator"
	0178535	VAC TRANSDUCER ASSEMBLY	"Vacuum Transducer"
	0178610	FILTER ASSEMBLY VENT	"Vent Filter"

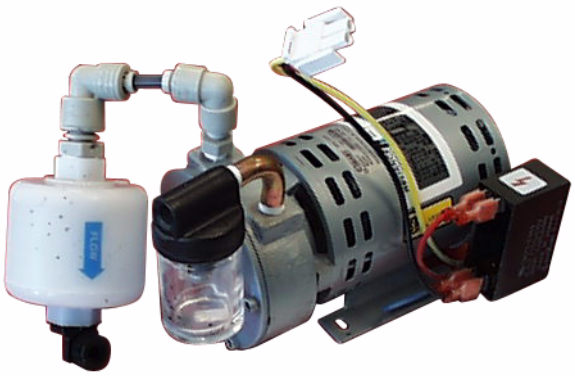
Air Pump

The air pump (see Figure 5.80) is one of two FRUs depending on the type of printer (see Table 5.24). The air pump includes a jar and filter assembly and a positive air filter; those two components are also available as separate FRUs (see “Jar and Filter Assembly” and “Positive Air Filter”).

Table 5.24 Air pump FRUs

Printer	FRU Number	Description
5120	P0178643	AIR PUMP
Early 5240		
Current 5240	0188037	AIR PUMP (FRU)
5122		

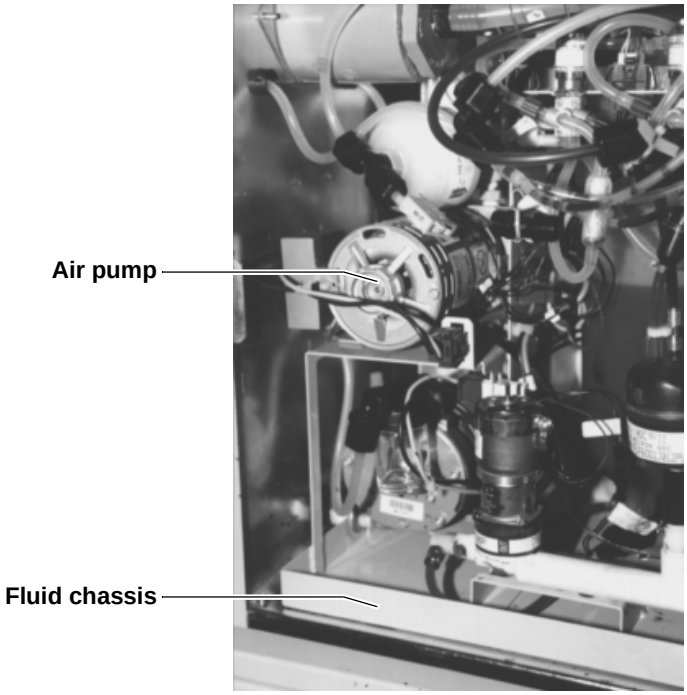
Figure 5.80 Air pump, current 5240 and 5122 (0188037)



Use the following procedure to replace the air pump:

1. Locate the air pump assembly mounted to air pump assembly mounting bracket (see Figure 5.81). The bracket is mounted to the fluid chassis.

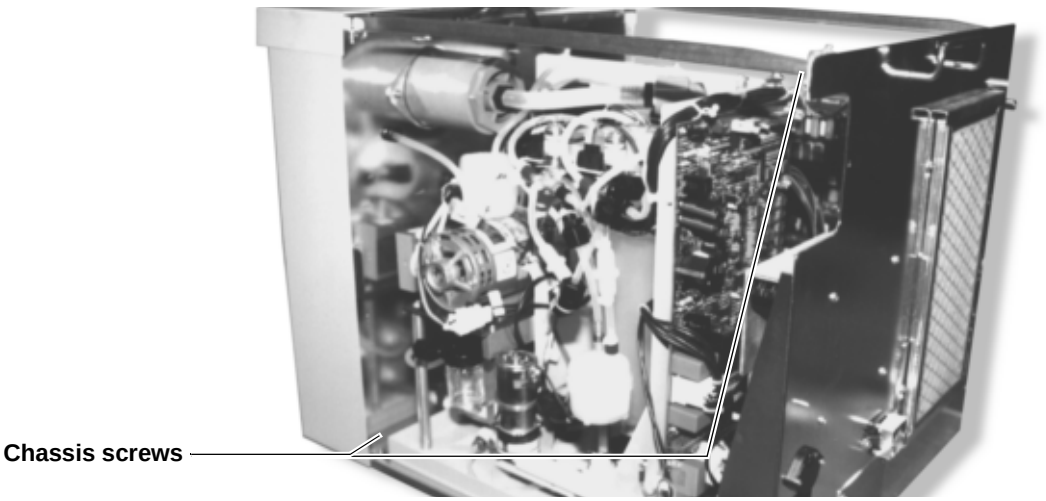
Figure 5.81 Air pump location, early 5240



Note: Unless otherwise stated, all locations mentioned in the following procedure are described as viewed from the fluid supply side of the printer.

2. Loosen the three Phillips screws securing the fluid chassis to the base plate (see Figure 5.82).
3. Slide the fluid chassis to the right (toward the low voltage power supply) to access the pump screws.

Figure 5.82 Fluid chassis screws, 5240



4. Remove the two Phillips screws securing the pump.
5. Disconnect the exhaust of the positive air pump filter.
6. Unplug the power cord to the pump (2-wire yellow and black).
7. Remove the pump.
8. Remove the positive air filter (see “Positive Air Filter”).
9. Remove the jar filter assembly from the air pump (see “Jar and Filter Assembly”).
10. Install the positive air filter and jar filter assembly on the replacement pump.
11. Install the replacement pump.
12. Plug in the power cord.
13. Position and secure the fluid chassis.

Catcher Valve

5240 Only

The catcher valve (0182512) is a component of the 5240 printer (see Figure 5.83).

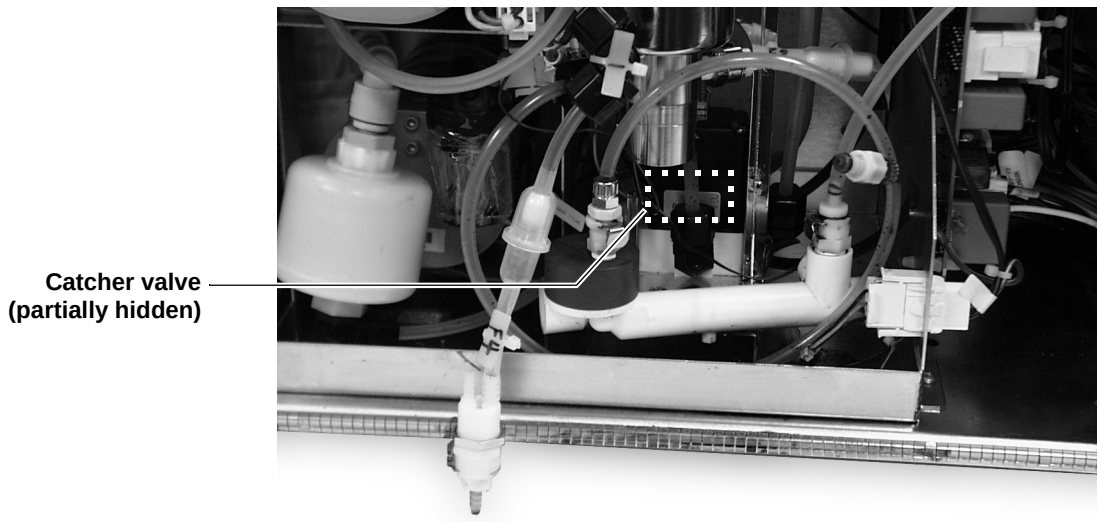
Figure 5.83 Catcher valve, 5240 printhead (0182512)

Use the following procedure to replace the catcher valve:

1. Locate the catcher valve in the fluid chassis near the bottom of the ink tank (see Figure 5.84).
2. Remove the fluid supply assembly, or disconnect the main filter and move it aside, and then remove just the ink pump.
3. Disconnect the two spade-clip wires.

   These two wires run to the umbilical; they are part of the wire harness running to the Inkjet Controller board.
4. Remove the four screws securing the valve to its mounting bracket.
5. To install the replacement valve, reverse the removal procedure.

Figure 5.84 Catcher valve location, 5122 printer



Fill Valve

In all 5000 series printers, two fill valves (0178532) are mounted in the fluid system connected to replenisher supply and ink supply lines. The fill valve is part of an assembly made up of the following components:

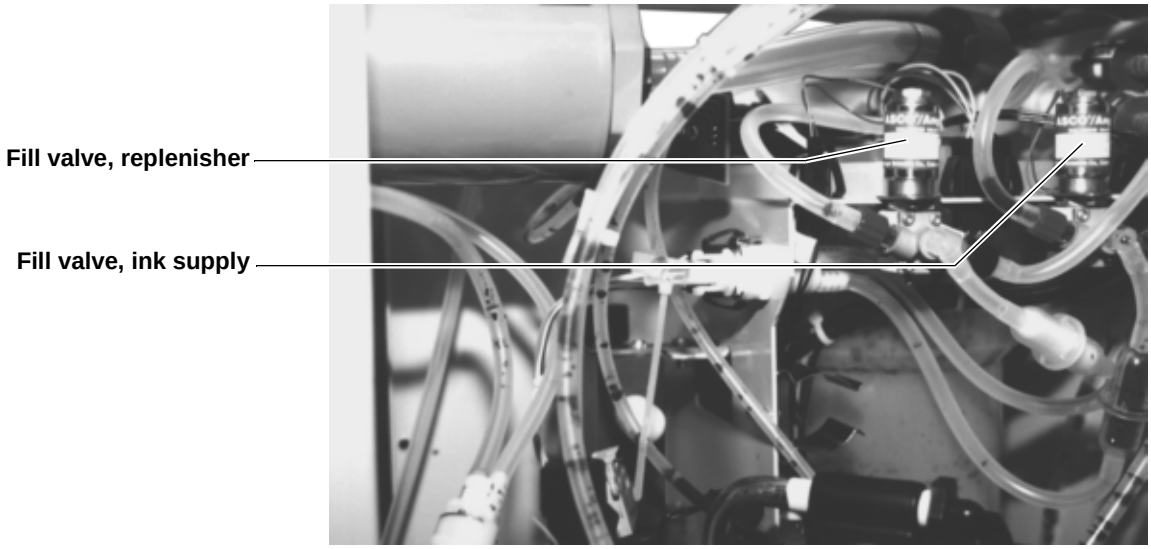
- Fill valve
- Solenoid
- Tubing and two nuts, one black and one red
- Vent filter
- Two inline filters, one air and one fluid
- Electrical connector, 2-wire plug.

Figure 5.85 Fill valve (0178532)

Use the following procedure to replace the fill valve:

1. Locate the fill valve mounted on the ink tank plate.
2. Remove the screw securing the valve.
3. Disconnect the 2-wire plug from the connector on the ink tank plate.
4. Disconnect the red and black tubing nuts. These lines are ink and replenisher.
5. Disconnect the fluid filter line.

Figure 5.86 Fill valve (0178532), fluid system



Filters

The following five fluid system filters are FRUs:

- Fluid inline filter (0178613)
- Main filter assembly (0178611)
- Mist filter (0178283)
- Vacuum regulator filter (0181227)
- Vent filter (0178610).

Filters are also available in the Filters Kit (0178600).

Fluid Inline Filter

Two fluid inline filters are the same FRU (0178613). Inline filters are used in all 5000 series printers in the following fluid lines:

- Between the ink supply outlet and ink fill valve inlet
- Between the replenisher outlet and the replenish fill valve inlet.

The lines from the filters inlets to lead to the fluid containers have quick-disconnects. The filter and housing are one component. Opening the housing and replacing just the filter element is not recommended.

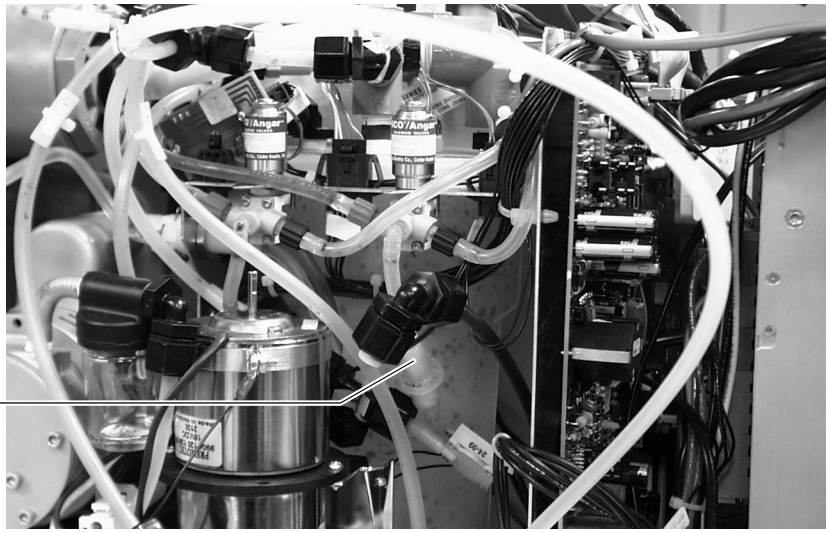
Figure 5.87 Fluid inline filter (0178613)

Use the following procedure to replace either fluid inline filter:

1. Locate the filter on the line between the ink supply or replenisher outlets and the corresponding fill valve (see Figure 5.88).

   The two fluid inline filters connect the two fill valves to the fluid supplies. One inline fluid filter connects to the ink fill valve, while the other inline filter connects to the replenish fill valve. The other ends of the fluid inline filters connect to fluid supply quick-disconnects that leads to the fluid containers.

Figure 5.88 Fluid inline filter location, 5122



2. Pull the inlet line off the barbed inlet fitting on the filter.
3. Pull the outlet line off the barbed outlet fitting on the filter.
4. Install the replacement filter by reversing these steps.

Caution: Check that the arrow on the filter housing points in direction of flow (toward the fill valve).

Main Filter Assembly

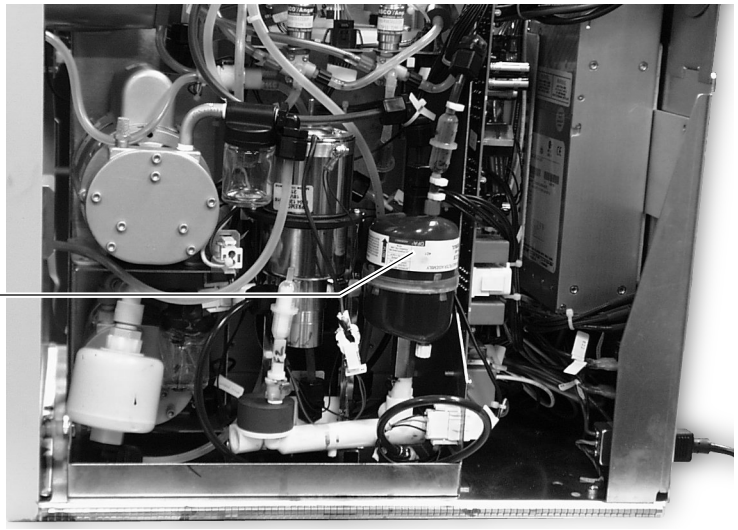
The main filter assembly (0178611) is used in all 5000 series printers; it includes the filter housing, inlet and outlet tubes, and fittings.

Figure 5.89 Main filter assembly

Use the following procedure to replace the main filter assembly:

1. Locate the main filter mounted on the fluid supply assembly (see Figure 5.90).

Figure 5.90 Main filter assembly location, 5122



2. Drain (empty) the fluid bypass assembly (see “Drain and Flush Procedures”).
3. Disconnect the #1 elbow fitting from the tube on the main filter.
4. Remove the fluid bypass assembly as described in the fluid bypass assembly removal procedure.
5. Press the quick-disconnect on the bottom of the main filter securing the main filter to the fluid supply assembly.
6. Install the replacement main filter assembly by reversing this procedure, then refill the fluid bypass assembly (see “Fluid Bypass Assembly”).

Mist Filter

The mist filter (0187283) is installed in the mist filter fitting in all 5000 series printers. The mist filter FRU is a 4-pack (see Figure 5.91).

Figure 5.91 Mist filter (0187283)

Use the following procedure to replace the mist filter:

1. Locate the mist filter fitting inside the fluid compartment, centered above the ink and replenisher containers (see Figure 5.92).

Caution: The clogged filter will leak ink. To avoid contact with ink, wear latex gloves.

Figure 5.92 Mist filter location

2. Push the quick-release button on the left side of the fitting to release the fitting.
3. Pull the mist filter fitting out far enough to remove the mist filter.

4. Insert the new mist filter into the mist filter fitting, leaving 1.5 inches (3.81 cm) of the mist filter protruding (see Figure 5.93).

Figure 5.93 Mist filter replacement

Positive Air Filter

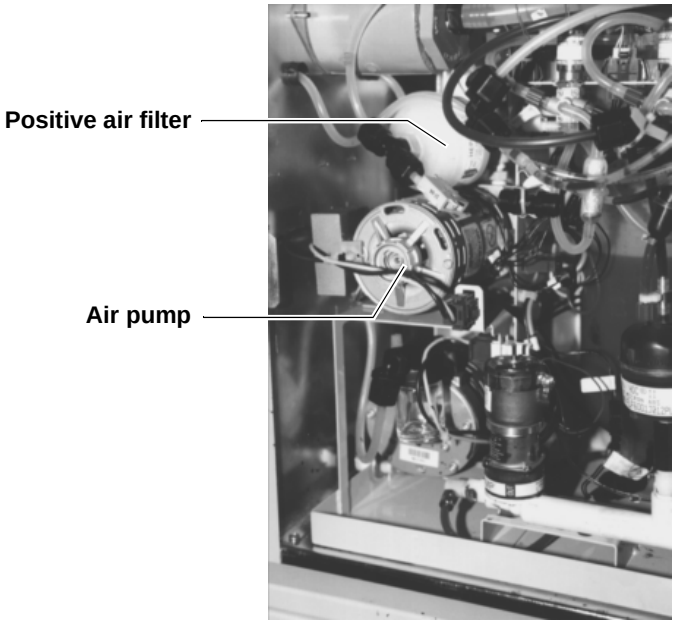
The positive air filter (0178615) is used in all 5000 series printers (see Figure 5.94), but its location varies. The positive air filter is included in the air pump assembly (see “Air Pump”).

Figure 5.94 Positive air filter (0178615)

Use the following procedure to replace the positive air filter:

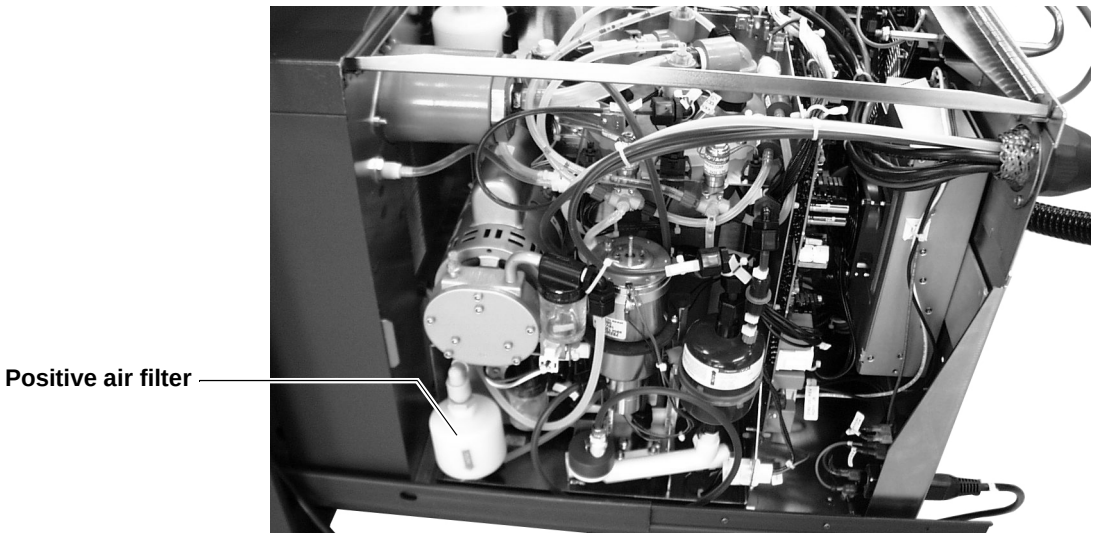
1. In a 5120 or early 5240, locate the filter mounted on top of the air pump assembly in the fluid compartment (see Figure 5.95).

Figure 5.95 Positive air filter, early 5240



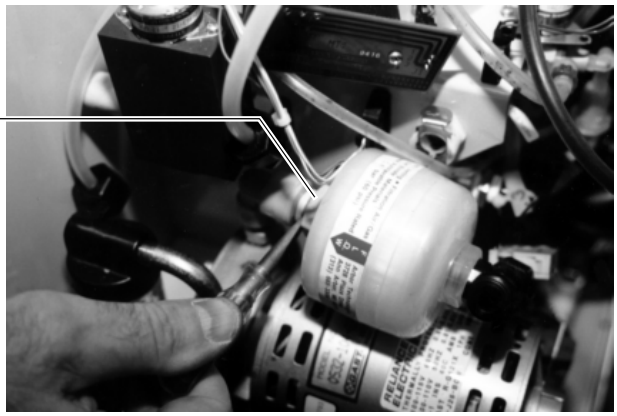
2. In the current 5240 or 5122, locate the filter just above the vacuum pump (see Figure 5.96).

Figure 5.96 Positive air filter location, 5122



3. Disconnect the positive air switch assembly from the connector on the right side of the fluid tray (see “Positive Air Switch”).
4. Disconnect the tube connecting the air pump to the umbilical from its connector on the air filter.
5. Insert a small, flat-blade screwdriver between the plastic ring and the filter fitting and carefully pry the air filter loose (see Figure 5.97).
6. Attach the replacement filter to the fitting, reconnect the air pump tube and the positive air switch connector.

Figure 5.97 Positive air filter removal



Vacuum Regulator Filter

The vacuum regulator filter (0181227) is used in all 5000 series printers (see Figure 5.98).

Figure 5.98 Vacuum regulator filter (0181227)

Use the following procedure to replace the vacuum regulator filter:

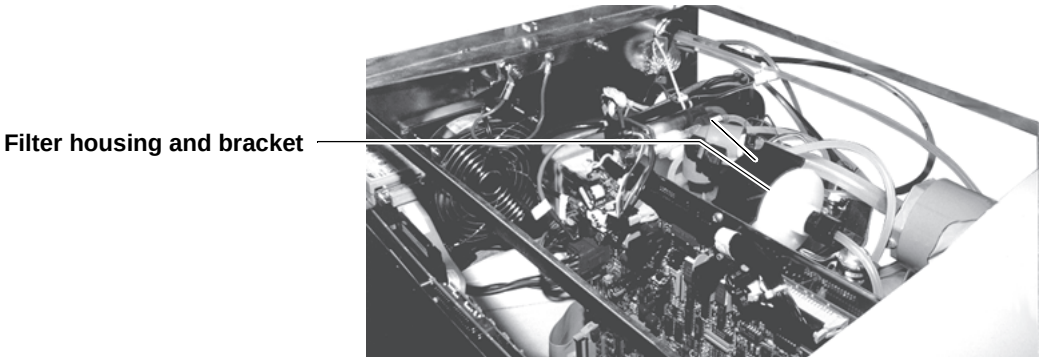
1. Locate the vacuum regulator filter bracket in the fluid system compartment (see Figure 5.99). The bracket is mounted to the fluid system enclosure behind the IJC board.

Note: In the 5120 and early 5240, the vacuum regulator filter was mounted in a bracket on the fluid system chassis behind the inkjet controller board (see Figure 5.100).

2. Remove the Parker fitting on the vacuum regulator.
3. Pull the vacuum regulator filter straight up out of its holder.

Figure 5.99 Vacuum regulator filter, 5122

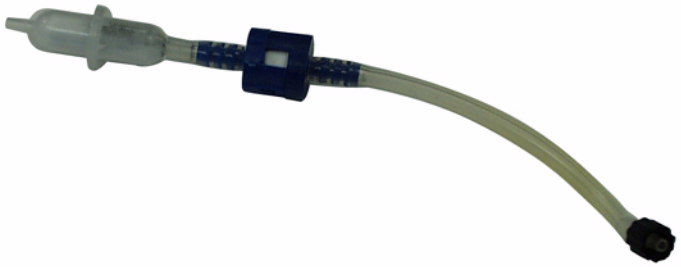
Figure 5.100 Vacuum regulator filter, early 5240



Vent Filter

Two vent filter assemblies (0178610) are used in all 5000 series printers. Both vent filter assemblies are the same FRU; the assembly consists of the filter, a blue, 1-way check valve, and tubing (see Figure 5.101).

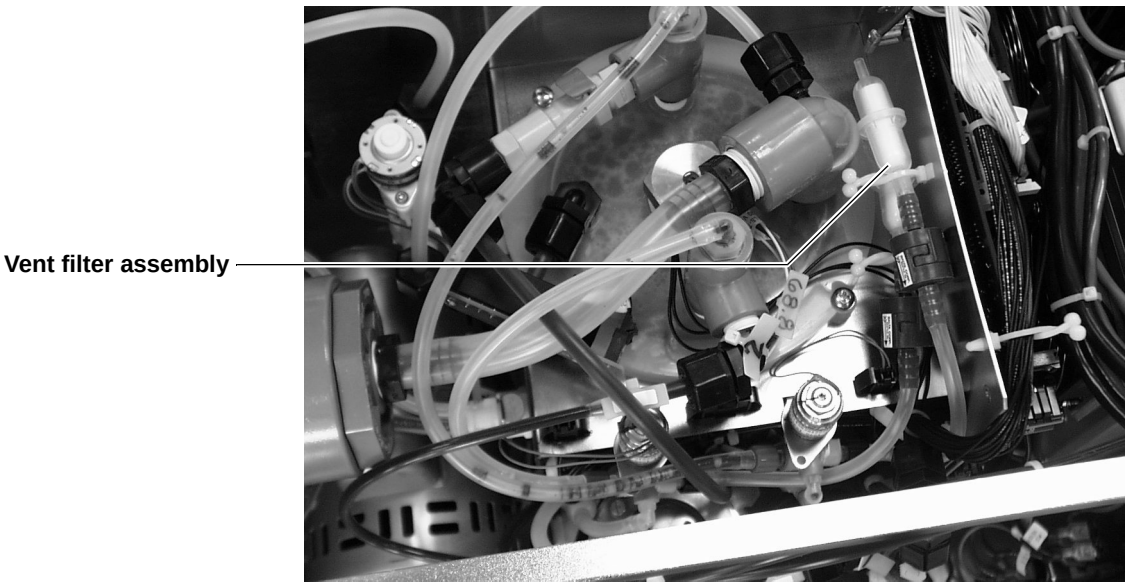
Figure 5.101 Vent filter assembly (0178610)



Use the following procedure to replace the vent filter assembly:

1. Locate the vent filter assembly on top of the fluid supply housing near the vacuum elbow (see Figure 5.102).

Figure 5.102 Vent filter location, 5122

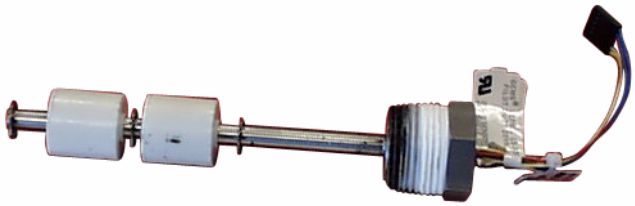


2. Release the vent filter line from the plastic retaining clip.
3. Remove the vent filter assembly by unscrewing the black fitting on the solenoid.
4. Remove the tubing nut from the right side of the fill valve for the vent filter assembly being removed.
5. Remove the tubing, check valve, and vent filter from the fill valve.
6. Connect the replacement assembly to the fill valve with the tubing nut and route the tubing along the same path.

Float Switch

The float switch assembly (0178538) is used in all 5000 series printers (see Figure 5.103).

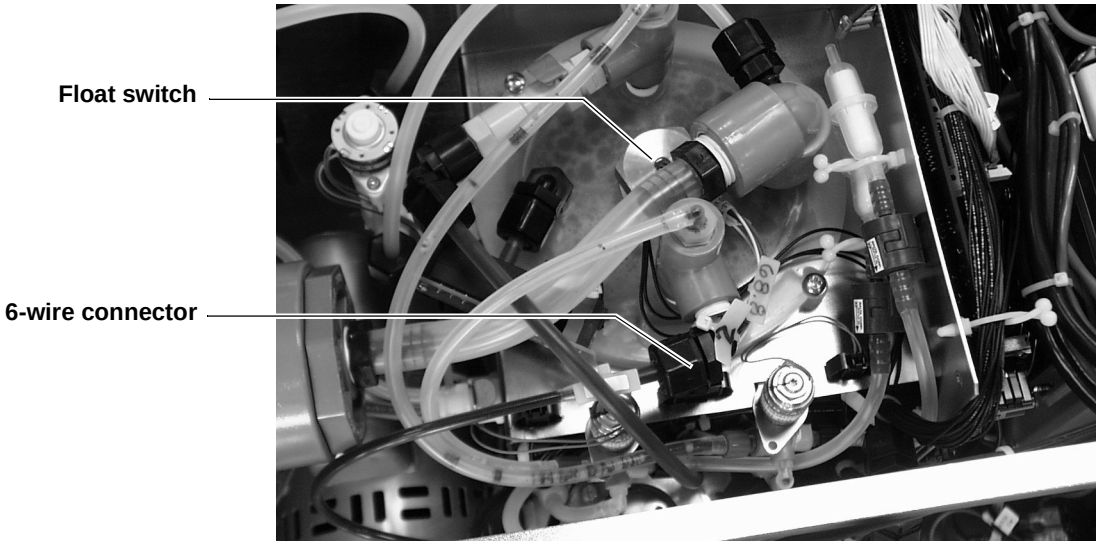
Figure 5.103 Float switch (0178538)



Use the following procedure to replace the float switch:

1. Locate the float switch located on top of the ink tank (see Figure 5.104).

Figure 5.104 Float switch location, 5122



2. Unplug the 6-wire cable from the connector next to the float switch.
3. To provide space to turn a wrench, remove the fitting for the line going to the vacuum transducer.
4. Unscrew the large, silver hex screw holding the switch out of the tank.

   Use channel locks, a crescent wrench, or a deep socket wrench to unscrew the float switch.

5. Apply Teflon tape to the new hex screw.
6. Install the replacement float switch by reversing the removal procedure.

Fluid Bypass Assembly

The fluid bypass assembly (0178617) is used in all 5000 series printers. Two bypass assemblies are included in the FRU package (see Figure 5.105). The bypass assemblies are differentiated by the following color codes for the ink pump restrictor:

- Red = low volume pump
- Black = high volume pump capacity.

Install the bypass assembly that matches the one in the printer.

Figure 5.105 Fluid bypass assembly, high and low capacity (0178617)

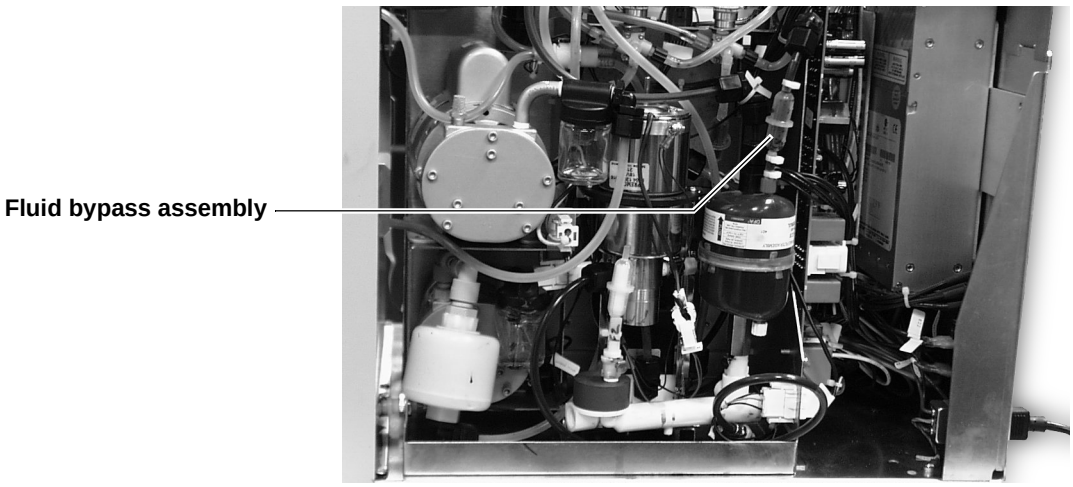
Use the following procedure to replace the bypass assembly.

1. Locate the fluid bypass assembly at the base of the ink tank in the fluid chassis (see Figure 5.106).

   The bypass assembly is part of the fluid supply assembly and connected to that assembly at the top of the main filter assembly. The assembly includes an inline filter.

2. Disconnect the top poly fitting on the tube running to the bottom of the ink tank.
3. Disconnect the bottom, red fitting on the line going to the main filter assembly.
4. Remove the assembly.
5. Install the replacement assembly by reversing the removal procedure.

Figure 5.106 Fluid bypass assembly location, 5122



Fluid Supply Assembly

The fluid supply assembly is one of two FRUs depending on the type of printer (see Table 5.25).

Table 5.25 Fluid supply assembly FRUs

Printer	FRU Number	Description
5120	P0178533	FLUID SUPPLY ASSY 5120/5240
Early 5240		
Current 5240	0188036	FLUID SUPPLY (FRU)
5122		

Figure 5.107 Fluid supply assembly, 5120 and early 5240 (P0178533)

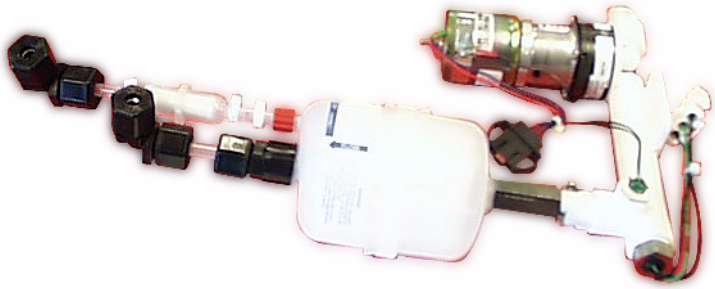
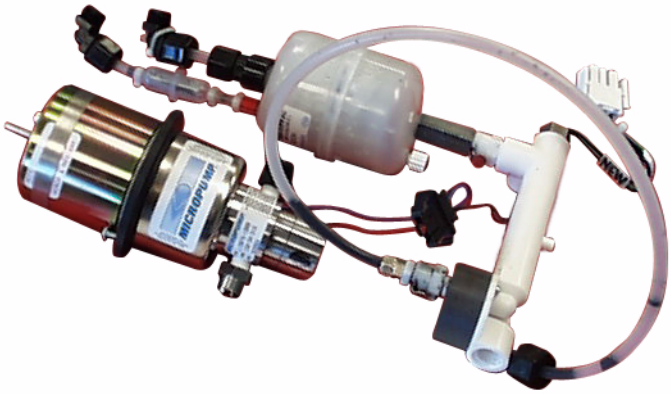


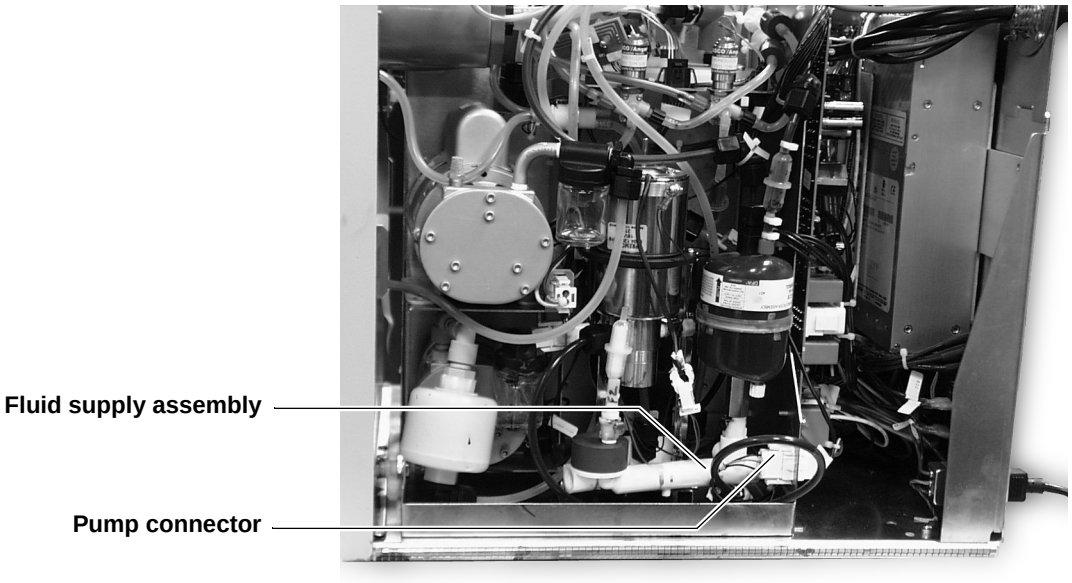
Figure 5.108 Fluid supply assembly, current 5240 and 5122 (0188036)



Use the following procedure to replace the fluid supply assembly:

1. Locate the fluid supply assembly in the fluid chassis (see Figure 5.109).

Figure 5.109 Fluid supply assembly location, 5122



2. Disconnect the (5-wire) cable from the pump and thermistor to the DC wire harness.
3. Disconnect the (3-wire) ink heater cable.
4. Disconnect the pump inlet line (quick-disconnect).
5. Disconnect the pump outlet line (poly fitting).
6. Disconnect the bypass line (poly fitting).
7. Disconnect the main ink line to the umbilical (poly fitting).
8. Remove the four Phillips securing the pump housing to the mounting plate.
9. Remove the two bolts securing the manifold to the base plate.
10. Remove the fluid supply assembly.
11. Replace the fluid supply assembly by reversing the removal procedure.

Fluid System Cables

This section describes the following cables:

- Fluid system AC cable (0178500)
- Fluid system DC cable (0178526)
- Ink heater cable (0182430).

Fluid System AC Cable

The fluid system AC cable (0178500) connects J5 on the ACHV supply board to the following fluid system components:

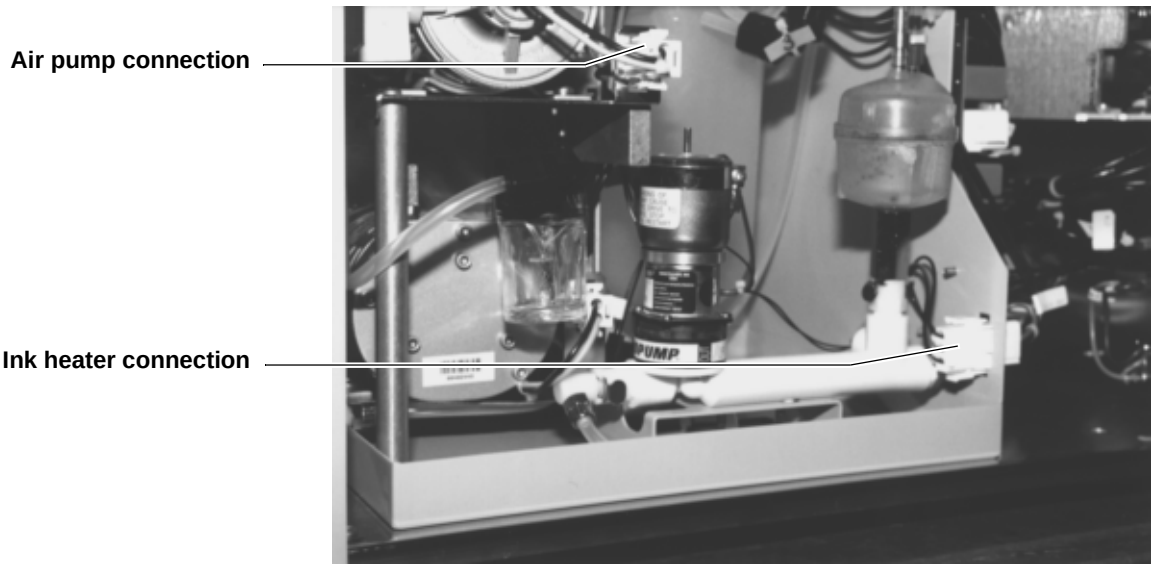
- Air pump - wire plug on pump mounting
- Fans - two wire plugs
- Ink heater - wire plug on fluid chassis
- Vacuum pump - wire plug
- Fluid chassis - ground wire.

This cable has manufacturing part number 0178632.

Figure 5.110 Fluid system AC cable (0178500)

Figure 5.111 shows the fluid system AC cable connections to the ink heater and air pump.

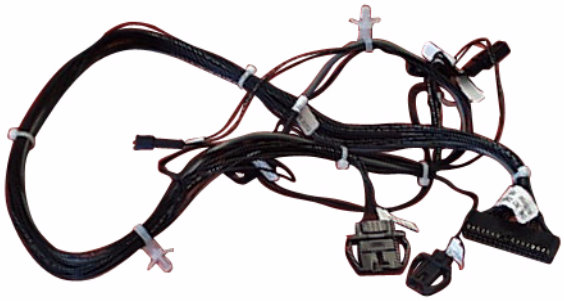
Figure 5.111 Fluid system AC cable connections



Fluid System DC Cable

The fluid system DC cable (0178526) is used in all 5000 series printers. This cable has manufacturing part number 0175788.

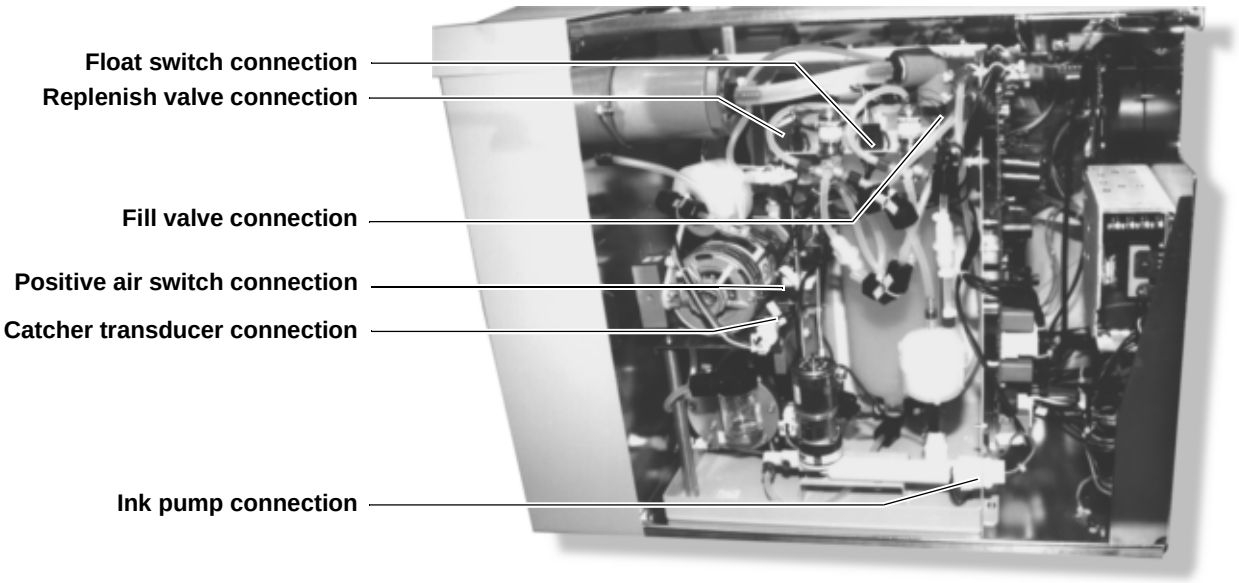
Figure 5.112 Fluid system DC cable (0178526)



Use the following procedure to replace this cable:

1. Locate the fluid system DC cable that connects J9 on the inkjet controller board to seven connectors on fluid system components (see Figure 5.113).

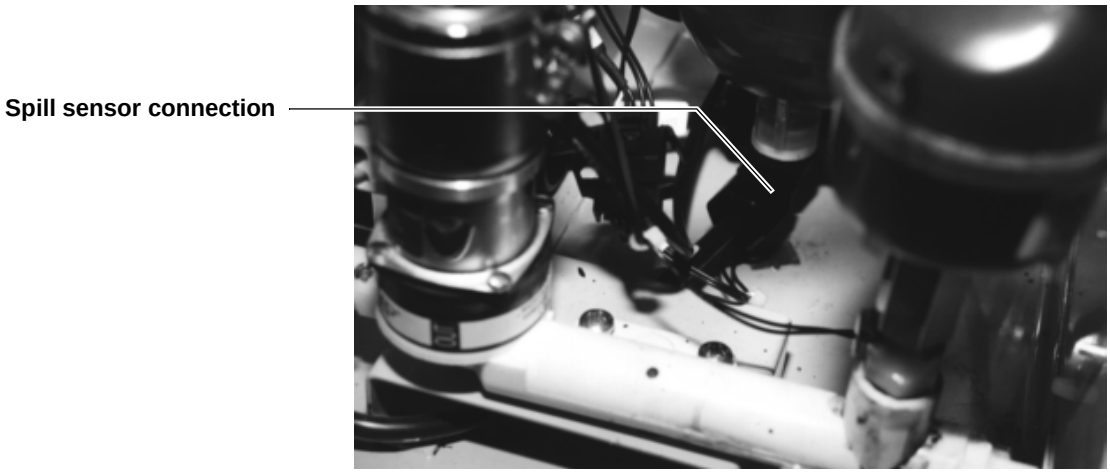
Figure 5.113 Fluid system DC cable connections, 5240



2. Disconnect the cable from J9 on the Inkjet controller board.
3. Open the four plastic ties on IJC and AVHV boards.
4. Cut the plastic tie on back side of the fluid compartment partition.
5. If necessary to access connectors, remove the vacuum transducer (see “Vacuum Transducer”).

6. Disconnect the cable from the following components in the fluid system (see Figure 5.113):
   - Fill valve - the left-hand connector on top of the fluid supply assembly.
   - Float switch - connector between the two fill valve solenoids on top of the fluid supply housing.
   - Ink pump - right-most connector on top of the fluid supply housing.
   - Replenish valve - right-hand connector on top of the fluid supply assembly.
   - Positive air switch - connector on the right side of the fluid tray.
   - Vacuum regulator assembly - connector on the fluid supply housing, directly behind the fluid supply quick-disconnect.
   - Spill sensor - small connector cabled with the fluid supply cable and ink thermistor electrical connectors behind the ink pump assembly (see Figure 5.114).
7. Remove the fluid system DC cable.
8. Rout and connect the replacement cable by reversing the removal procedure. Replace any cut plastic ties.

Figure 5.114 Spill sensor connection, 5240



Ink Heater Cable

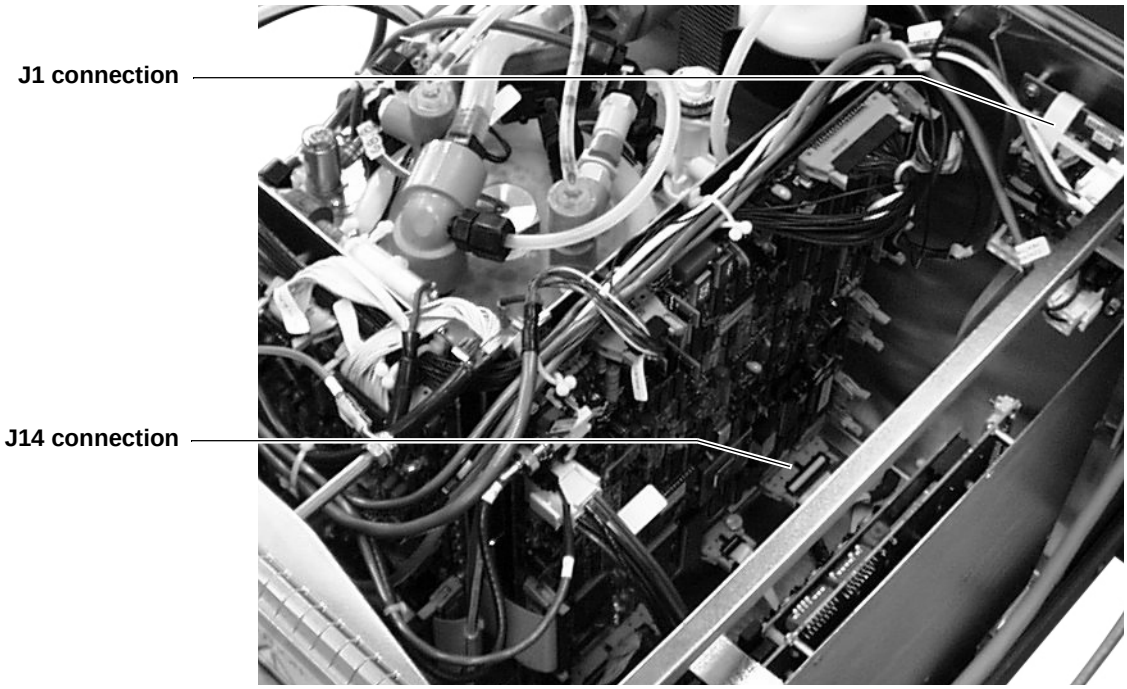
Current 5240 and 5122 Only

In the current 5240 and 5122, the ink heater cable (0182430) connects J14 on the heater controller board to J1 on the inkjet controller board. This cable has manufacturing part number 0182727.

Figure 5.115 Ink heater cable (0182430)

Figure 5.116 shows the location and connections of the ink heater cable.

Figure 5.116 Ink heater cable location, 5122



Heater Controller Board

Current 5240 and 5122 Only

In the current 5240 and 5122, the ink heater controller board (0182511) regulates the ink condensation heater in the printhead (see Figure 5.117). This board must have firmware compatible with the inkjet controller board firmware. The current FRU has firmware for IJC V4.02. The ink heater board does not require configuration. The board layout is provided for general reference (see Figure 5.118).

Figure 5.117 Heater controller board (0182511)

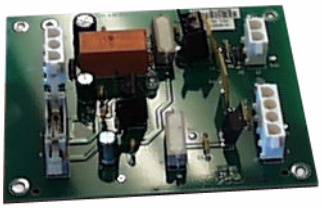
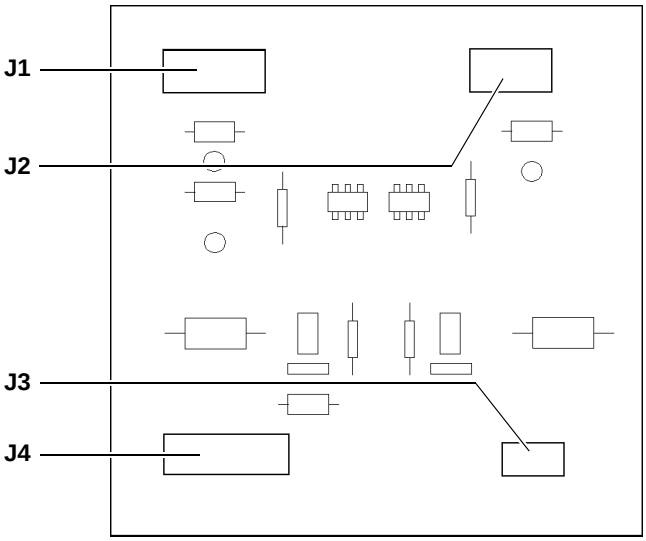


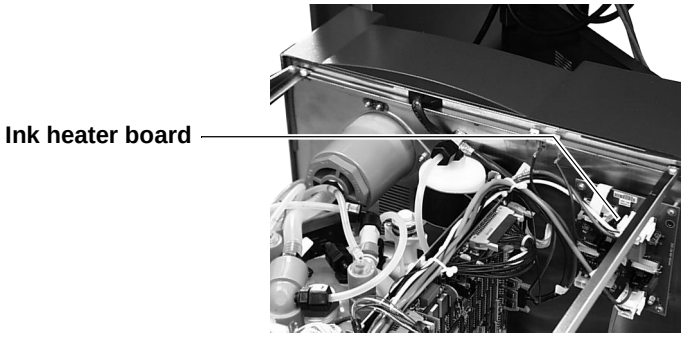
Figure 5.118 Ink heater board layout



Use the following procedure to replace the ink heater board:

1. Locate the heater controller board near mounted on the front wall of the printer compartment on the electronics side near J3 on IJC board (see Figure 5.119).

Figure 5.119 Ink heater board location, 5122



2. Disconnect the cables from the board (see Table 5.26 and Figure 5.119).

Table 5.26 Cables, ink heater controller board

Connector	Cable	To:	Function
J1	0182430	Inkjet controller board J14	Control inputs[1]
J2	DC harness[2]	Low voltage power supply	+24V input
J3	-	Condensation heater at printhead	Control outputs
J4	-	-	Not used

1. This 10-pin ribbon cable has manufacturing part number 0182721 or 0182727.
2. This 4-wire cable is part of the Fluid System DC wiring harness (0178526)

3. Remove the four small, Phillips screws securing the board (through standoffs) to the printer compartment wall.
4. Install a replacement board by reversing the removal steps.

Ink Tank

The ink tank is either of two FRUs (see Table 5.27 and Figure 5.120).

Table 5.27 Ink tank FRUs

Printer	FRU Number	Notes
5120 and 5240	0186760	INK TANK ASSY (5120/5240) FRU
Current 5240 and 5122	0186761	IN TANK ASSY (5240N) FRU

Figure 5.120 Ink tank, 5122

Use the following procedure to replace the ink tank:

1. Drain the ink tank and fluid system.
2. Locate the tank in the center of the fluid compartment (see Figure 5.121).
3. Remove the fluid supply assembly (see “Fluid Supply Assembly”).

Figure 5.121 Ink tank location, 5122

4. Disconnect all the fittings on the top of the tank.
   - Mist filter line
   - Vacuum regulator line
   - Ink and replenisher fill lines
   - compartment
   - Catcher valve line

5. Disconnect all the fittings on the bottom of the tank.
   - Main ink supply line
   - Bypass line
   - Drain line

   The bypass and drain lines come off a T-fitting.
6. Disconnect the float switch cable.
7. Remove the four Phillips screws securing the tank to its bracket.
8. Lift the tank straight up out of its bracket.
9. Install the replacement tank by reversing the removal steps.

Jar and Filter Assembly

Two jar and filter assemblies (0178645) are installed in a 5000 series printer in the following locations (see Figure 5.122):

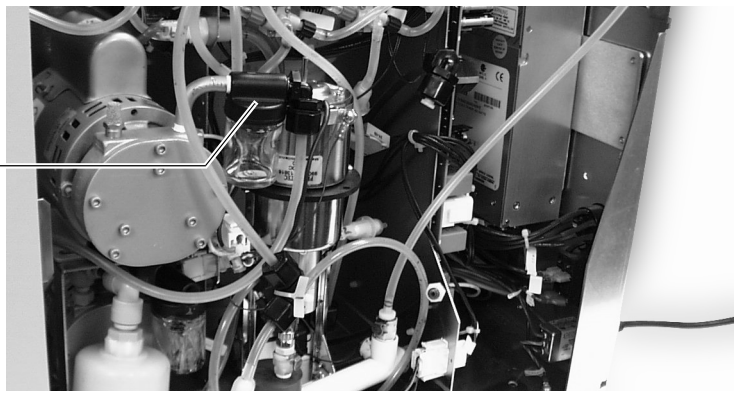
- Mounted on the air pump assembly
- Mounted on the vacuum pump assembly.

Figure 5.122 Jar and filter assembly (0178645)

Use the following procedure are used to replace either assembly.

1. Locate the jar and filter assembly on the pump, toward the open side of the fluid compartment (see Figure 5.123).

Figure 5.123 Jar and filter assembly on vacuum pump, 5122



2. On the vacuum pump, loosen the pump and move it enough to unscrew the jar.
3. On the air, remove the pump to access the jar.
4. Apply new teflon tape to the elbow of the pump.
5. Install the replacement jar and filter assembly by reversing the removal procedure.

Mist Filter Fitting

The mist filter fitting (0178537) is used in all 5000 series printers (see Figure 5.124).

Figure 5.124 Mist filter fitting (0178537)

Use the following procedure to replace the mist filter fitting:

1. Locate the mist filter fitting in the ink compartment; it is the elbow between the fluid containers (see Figure 5.125).

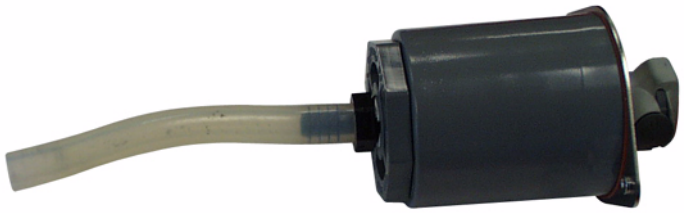
Figure 5.125 Mist filter fitting location, 5122

2. Disconnect the fitting at the quick-disconnect.
3. Connect the replacement fitting exactly like the removed fitting.

Mist Filter Housing

The mist housing assembly (0178541) is used in all 5000 series printers (see Figure 5.126).

Figure 5.126 Mist filter housing (0178541)



Use the following procedure to replace the mist filter housing:

1. Locate the mist housing assembly near the vacuum regulator filter housing mounted to the rear panel of the fluid compartment, between the ink and replenisher bottles (see Figure 5.127).

Figure 5.127 Mist filter housing location, 5122

2. Open the front door of the printer.
3. Pull the mist filter housing tube off the barbed fitting.
4. Remove the mist filter fitting.
5. Remove the two screws on the front of the housing.
6. Remove the housing.
7. Install the replacement housing by reversing the removal procedure.

Positive Air Switch

5120 and Early 5240

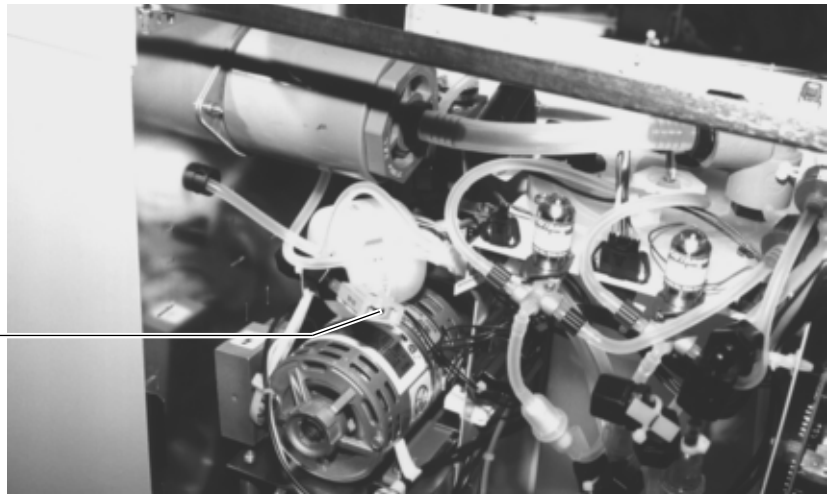
In the 5120 and early 5240, the positive air switch (0178534) is connected to the positive air filter fitting (see Figure 5.128).

Figure 5.128 Positive air switch (0178534)

Use the following procedure to replace the positive air switch:

1. Locate the positive air switch connected to the T-fitting on the line running to the positive air filter (see Figure 5.129).

Figure 5.129 Positive air switch location, early 5240



2. Disconnect the (2-wire) cable.
3. Pull the switch off the tubing (the switch end is barbed).
4. Install the replacement switch by reversing the removal procedure.

Spill Sensor

The spill sensor (0183339) is used in all 5000 series printers (see Figure 5.130). The sensor has the manufacturing part number 0174542.

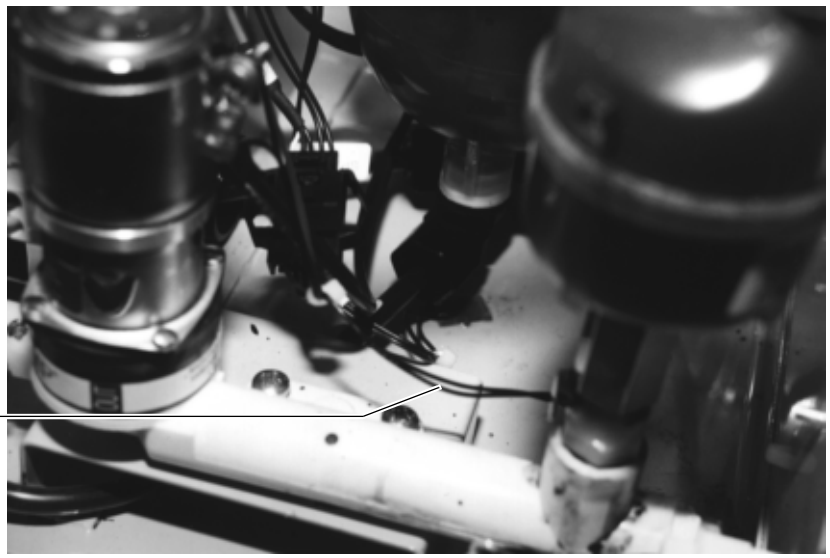
Figure 5.130 Spill sensor (0183339)

Use the following procedure to replace the spill sensor:

1. Locate the spill sensor near the bottom of the ink tank (see Figure 5.131).

   The sensor is mounted on the fluid chassis base plate underneath the ink tank.

Figure 5.131 Spill sensor connector, 5122



2. Use a flat-blade screwdriver to pry the sensor off the base plate.

   The sensor is stuck to the base plate with a drop of silicone.

3. Put a dab of silicone on the replacement sensor and affix it to base plate, then reconnect the electrical cable.

Stepper Motor

The vacuum regulator stepper motor (0180235) is used in all 5000 series printers (see Figure 5.132).

Figure 5.132 Stepper motor (0180235)

Use the following procedure to replace the stepper motor:

1. Locate the stepper motor near the vacuum regulator filter (see Figure 5.133).

   The motor is mounted on a bracket on the fluid compartment housing.

2. Disconnect the (6-wire) electrical cable to the DC wire harness.
3. Remove the two screws securing the stepper motor to its bracket.
4. Install the replacement motor by reversing the removal procedure.

Figure 5.133 Stepper motor location, 5122

Vacuum Elbow

The vacuum elbow (0181018) is used in all 5000 series printers (see Figure 5.134).

Figure 5.134 Vacuum elbow (0181018)

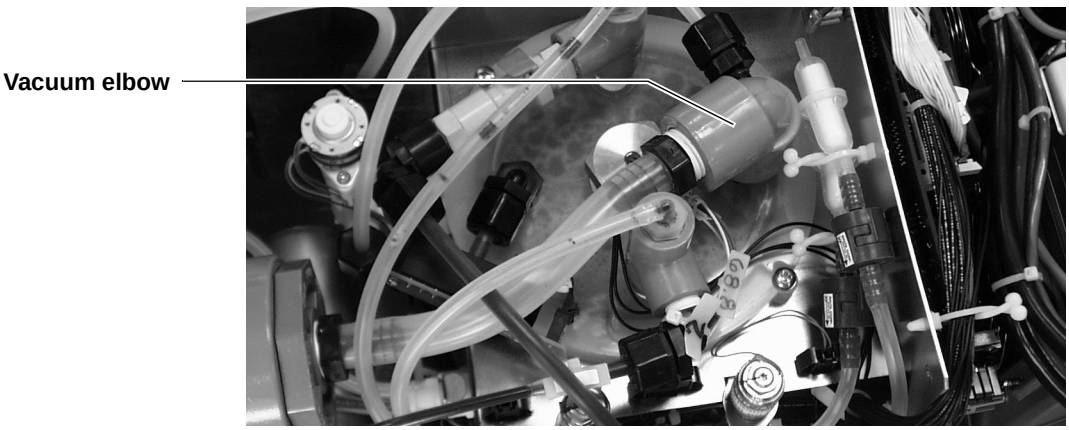
Use the following procedure to replace the vacuum elbow:

1. Locate the vacuum elbow near the inline filter on the air intake line (see Figure 5.135).

   The vacuum elbow is the large right-angle fitting that connects the mist filter line to the vacuum transducer.

2. Pull the mist filter line off the barbed fitting.
3. Unscrew the black fitting for the mist filter line.
4. Release the air intake line holding the inline filter and move the line out of the way.
5. Disconnect the Parker fitting on the line going to the vacuum regulator assembly.
6. Unscrew the vacuum elbow from the tank.
7. Apply Teflon tape to the replacement elbow.
8. Install the replacement elbow by reversing the removal procedure.

Figure 5.135 Vacuum elbow location, 5122



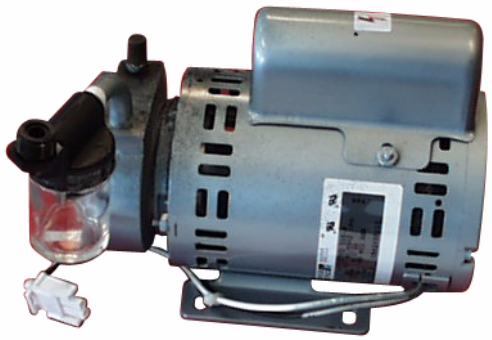
Vacuum Pump

The vacuum pump is one of three FRUs (see Table 5.28 and Figure 5.136). The vacuum pump includes a jar and filter assembly that is also available as separate FRU (see “Jar and Filter Assembly”).

Table 5.28 Vacuum pump FRUs

Printer	FRU Number	Notes
5120 and early 5240	P0178640	VACUUM PUMP FRU
Current 5240 and 5122	P0182427	VACUUM PUMP (240N) FRU
Modified 5122	0188364	ASSEMBLY - VACUUM PUMP
	0188373	CABLE - ADAPTER

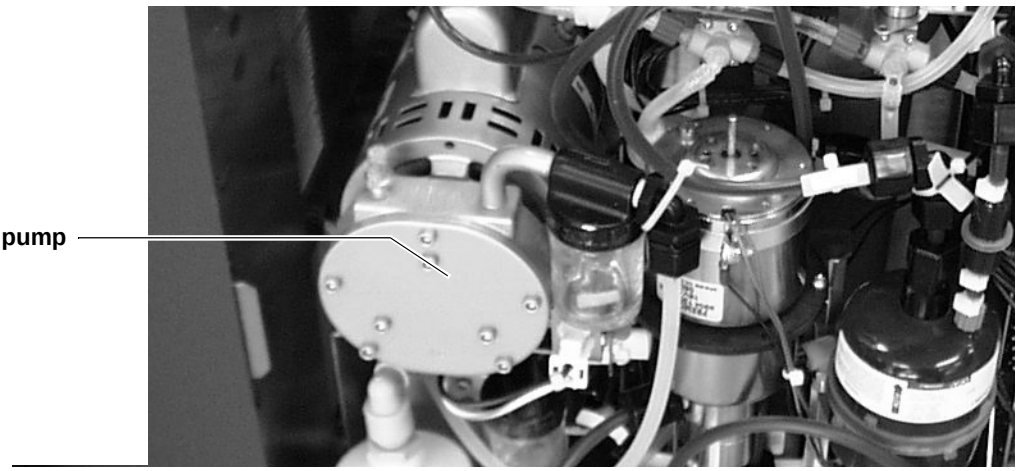
Figure 5.136 Vacuum pump, 5122 (P0182427)



Use the following procedure to replace the vacuum pump:

1. Locate the vacuum pump in the fluid chassis. In the current 5240 or 5122, it is above the air pump (see Figure 5.137). In an early 5240 or 5120, it is below the air pump. In a modified 5122, the pump assembly (including adapter plate and cable) are mounted on the regular bracket (see Step 7).

Figure 5.137 Vacuum pump location, 5122



2. Remove the screws securing the fluid chassis and move it to access the screws on the vacuum pump mounting.
3. Remove the two screws securing the pump to its mounting plate.
4. Disconnect the mist filter line.
5. Disconnect the electrical connection (2-wire plug).
6. Install the replacement pump by reversing the removal procedure, but slide the base of the replacement pump under the flange in the mounting plate.
7. To install the pump for field modifications 8 and 9, mount the pump and its adapter plate on the bracket for the original pump (see Figure 5.138).
8. Connect the adapter cable to the standard pump connector (see Figure 5.139).

Figure 5.138 Modified vacuum pump assembly, 5122

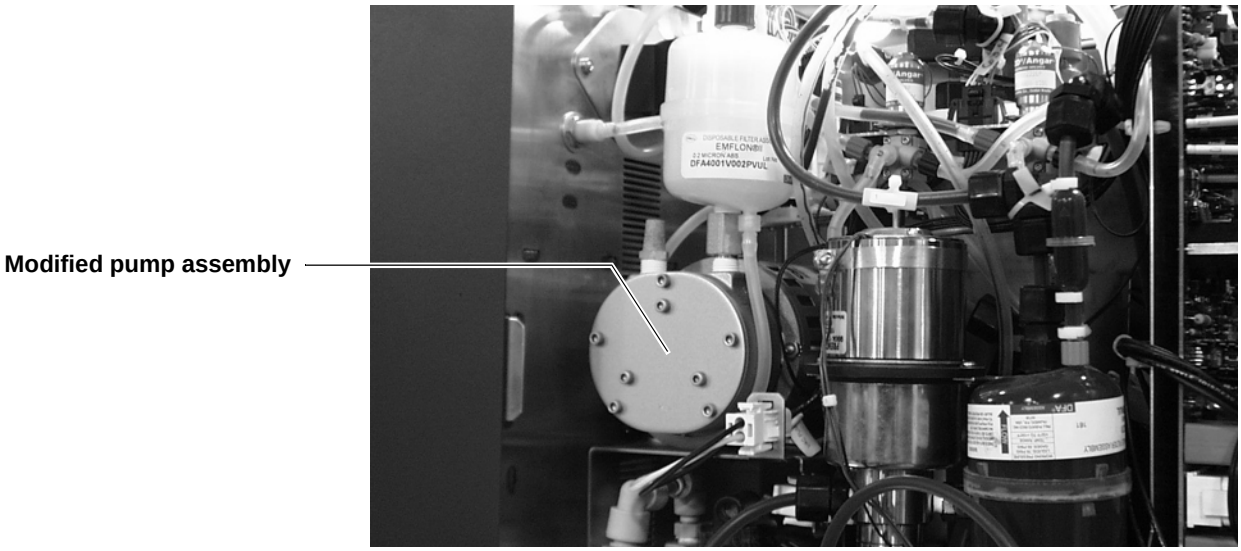
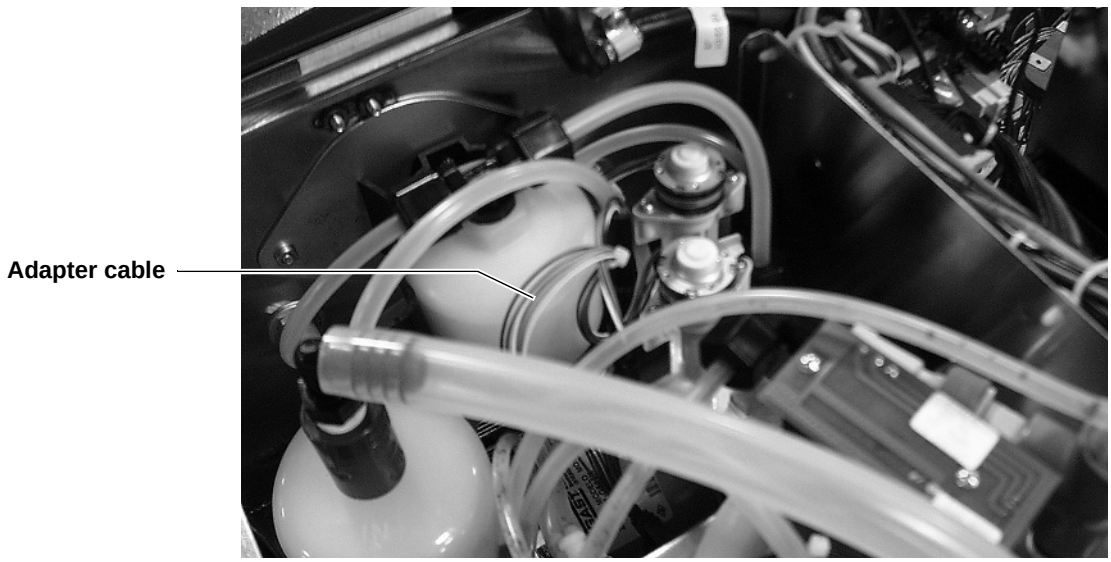


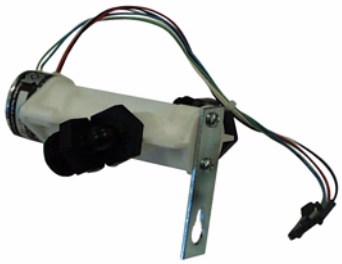
Figure 5.139 Adapter cable, modified vacuum pump, 5122



Vacuum Regulator

The vacuum regulator (0178499) is used in all 5000 series printers (see Figure 5.140).

Figure 5.140 Vacuum regulator (0178499)



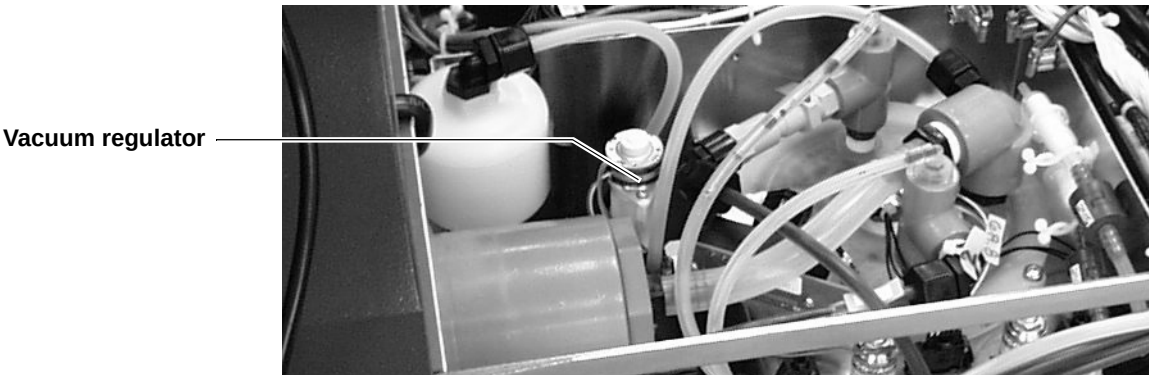
Use the following procedure to replace the vacuum regulator:

1. Locate the vacuum regulator near the vacuum regulator filter (see Figure 5.141).

Note: This filter housing was modified for the current 5240; the early 5240 had a different housing.

The regulator is mounted to a tab on the fluid system chassis.

Figure 5.141 Vacuum regulator location, 5122



2. Unplug the (6-wire) electrical cable from the connector on the ink tank frame.
3. Loosen the screw securing the regulator.

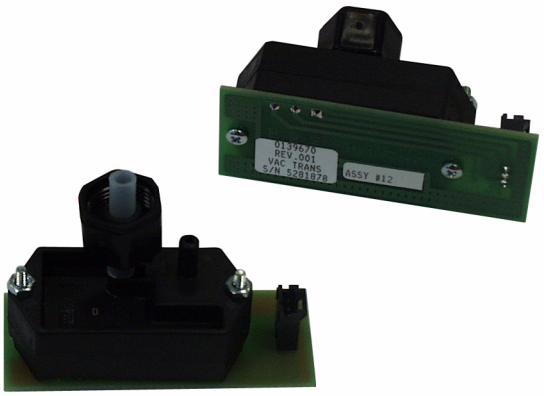
   The the screw head fits through the wider part of the slot in the regulator bracket.

4. Slide the regulator over to open up the large slot, and pull the regulator out.
5. Install the replacement regulator by reversing the removal procedure.

Vacuum Transducer

The vacuum transducer (0178535) is used in all 5000 series printers (see Figure 5.142).

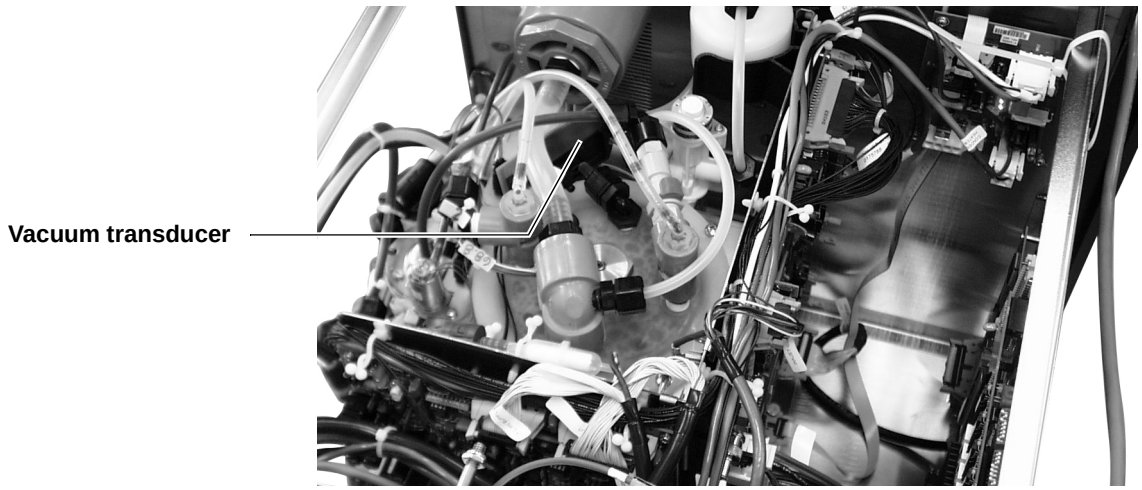
Figure 5.142 Vacuum transducer (0178535), front and back views



Use the following procedure to replace the vacuum transducer:

1. .Locate the vacuum transducer assembly near the float switch (see Figure 5.143).

Figure 5.143 Vacuum transducer location, 5122



2. Unplug the (3-wire) electrical connector.
3. If necessary, remove the air intake fitting and disconnect the Parker fitting on the tank to access the transducer.
4. Pull the transducer off the smooth nipple.
5. Install the replacement transducer by sliding the line on to nipple P1.

   Nipple P2 remains open to ambient air.

Printhead Components

This section describes the removal and replacement procedures for the printhead FRUs listed in Table 5.29. Printhead FRUs are components of one or more of the following printheads:

- 5120
- Early 5240
- Current 5240
- 5122.

Procedures in this section primarily describe the current 5240 and 5122 printheads (5240N and 240N in FRU descriptions refer to the current 5240). For complete 5120 and early 5240 printhead procedures, refer to the previous release of this *Service Guide* (0113851). For detailed printhead replacement instructions, refer to the following documents shipped with the printheads:

- *Printhead Packing Instructions* (0113479)
- *Printhead Replacement Instructions* (0113480).

Before replacing a printhead, check the number of printhead hours (see Chapter 1, “Diagnostics”). Printheads that fail within the warranty period can be returned. For printhead warranty terms and conditions, see the printer sales contract. When returned to service, a refurbished (RGR) printhead retains its original number of hours. If a printhead cannot be repaired, its hour meter is replaced on a new printhead, and that printhead is shipped to the original owner (customer). Refurbished printheads are shipped only to their original users. An RGR printhead can only have the same number of hours that it accrued before the customer returned it to Scitex Digital Printing, Inc..

Table 5.29 Printhead FRUs

Product	FRU Number	Description	See Heading:
5120	0173668	CONTAINER - SHIPPING PRINTHEAD	“Printhead Shipping Container”
5240	0178555	COVER, PH FRONT HOUSING (240)	“5120 and 5240 Printhead Covers”
5240	0178556	COVER, PH REAR HOUSING (240)	“5120 and 5240 Printhead Covers”
5120	0178557	COVER, PH REAR HOUSING 120	“5120 and 5240 Printhead Covers”
5120	0178558	COVER, PH FRONT HOUSING 120	“5120 and 5240 Printhead Covers”
5120	0178560	EYELID ASSY 120	“5120 Eyelid Assembly”
5240	0178561	EYELID ASSY 240	“5240 Eyelid Assembly”
5210	0178562	EYELID, SEAL 120	“Eyelid Seal”
Early 5240	0178564	EYELID, SOLENOID ASSY 120/240	“Early 5240 Eyelid Solenoid”
5240	0178570	NEST, PRINTHEAD (240)	“Printhead Nest”
5120	0178582	PH BOTTOM COVER ASSY 120	“5120 and 5240 Printhead Covers”
5240	0178583	PH BOTTOM COVER ASSY 240	“5120 and 5240 Printhead Covers”
5240	0178584	BYPASS PRINTHEAD ASSY (240)	“Fluid Bypass Assembly”
All	0178587	VALVE-XFLUSH/ANTISIPH/AIR INGEST	“Solenoid Valves”
All	0178588	SWITCH, SAFETY INTERLOCK ASSY	“Interlock Switch”
5240	0178589	CABLE, CHARGE DR TO PH (240)	“5240 Charge Driver Cable”

Table 5.29 Printhead FRUs (Continued)

Product	FRU Number	Description	See Heading:
5240	0178590	PCB, ADAPTER (240)	“Adapter Board”
5120	0178591	PCB, TAB BUFFER (120)	“Tab Buffer Board”
All	0178596	THERMISTOR INK/PH	“Thermistor”
5120	0178644	RETURN ORIFICE ASSY-120 FRU	“5120 Return Orifice Assembly”
All	0178650	CABLE, TRANSDUCER JUMPER	“Transducer Jumper Cable”
5240	0180246	RETURN ORIFICE ASSY-240 FRU	“5240 and 5122 Return Orifice Assembly”
5120	0181772	EYELID, SOLENOID ASSY PACKAGED-120	“5120 Eyelid Solenoid”
Current 5240	0182523	FILTER-AIR INGEST (240N) FRU	“Air Ingestion Filter”
Current 5240 and 5122	0182525	HEATER-INK CONDENSATION (240N)	“Ink Condensation Heater”
All	0182528	CLIP-FILTER PRINTHEAD	“Filter Clip”
All	0183433	WASHER-SOLENOID (QTY 10) (PKGD)	“Filter Clip”
5122	0188032	FRONT COVER (5122) PRINTHEAD (FRU)	“5122 Printhead Covers”
5122	0188033	BOTTOM COVER (5122) PRINTHEAD (FRU)	“5122 Printhead Covers”
5122	0188034	SOLENOID-EYELID (5122) (FRU)	“Current 5240 and 5122 Eyelid Solenoid”
5122	0188035	COVER-REAR P.H. (5122) (FRU)	“5122 Printhead Covers”
5122	0188382	5122 CHARGE DRIVER BOARD FRU	“5122 Charge Driver Board”
5122	0188575	2" EYELID ASSEMBLY	“5122 Eyelid Assembly”
5120	P0178572	PCB, CHARGE DRIVER 120	“5120 Charge Driver Board”
5240	P0178573	PCB,CHARGE DRVR INTRFACE (240)	“Charge Driver Interface Board”
5120	P0180717	MANIFOLD ASSY-PRINTHEAD (120)PKGD[1]	“5120 and Early 5240 Printhead Manifold”
5240	P0180718	MANIFOLD ASSY-PRINTHEAD (240)PKGD	“5120 and Early 5240 Printhead Manifold”
Current 5240	P0182524	MANIFOLD ASSY-PRINTHEAD (240N) FRU	“Current 5240 and 5122 Printhead Manifold”
5122	P0188200	PH-2"/120 DPI, PKD	“5122 Printhead”
	PH0188200	PRINTHEAD-REFURBED 2" (5122)	
5120	PH0139750	PH - 1"/120 DPI (REBUILT)	“5120 Printhead”
5240	PH0181000	PH - 1"/240 DPI RGR	“5240 Printhead”

1. The pressure transducer is now part of the printhead manifold and no longer available as a separate FRU.

Adapter Board

5240 Only

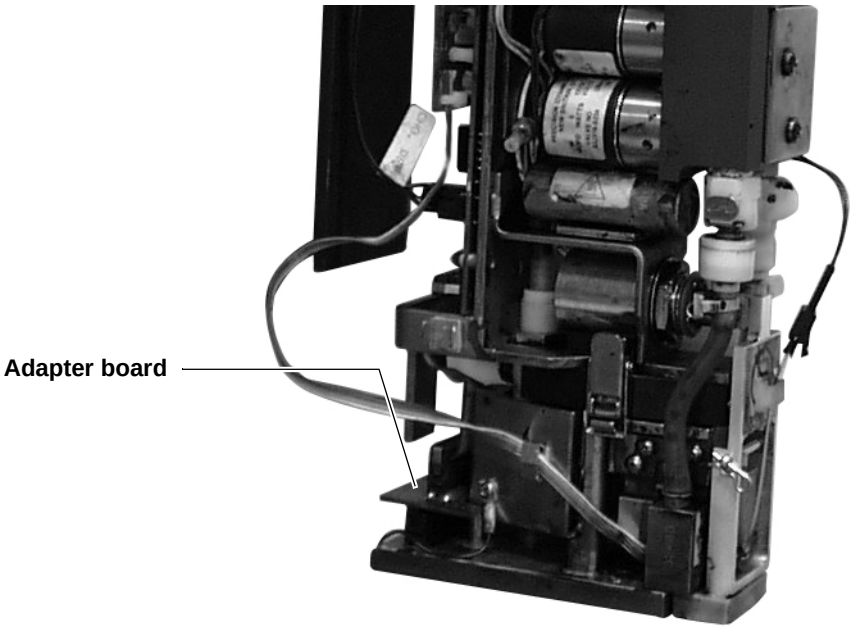
The adapter board (0178590) is a component of the 5240 printhead (see Figure 5.144).

Figure 5.144 Adapter board, 5240 printhead

The adapter board plugs into the 50-pin connector on the printhead assembly base (see Figure 5.145). The printhead interface cable plugs into the 30-pin connector on the adapter board and connects to J1 on the charge driver interface board.

For the adapter board removal, see the *Printhead Replacement Instructions* (0113480).

Figure 5.145 Adapter board location, 5240 printhead



Air Ingestion Filter

The air ingestion filter (0182523) is a component of all 5000 series printheads (see Figure 5.146).

Figure 5.146 Air ingestion filter (0182523)

Use the following procedure to replace the air ingestion filter:

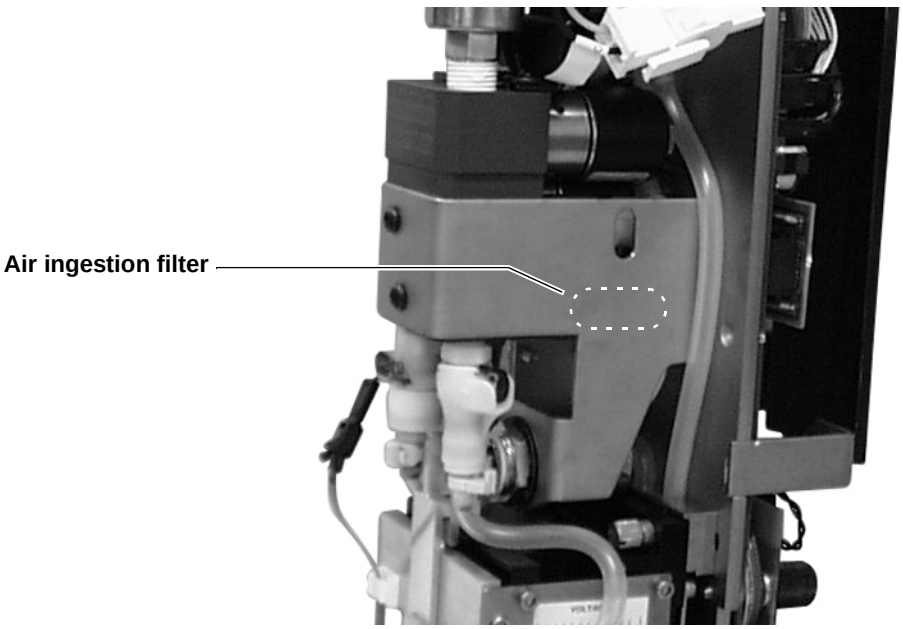
1. Locate the air ingestion filter on the printhead housing (see Figure 5.147).
2. Disconnect the inlet and outlet tubes from the manifold.
3. Disconnect the ink condensation heater line from the manifold (a quick-disconnect).
4. Unplug the two electrical connections from the manifold.
5. Remove the two screws securing the manifold to the printhead frame.

Caution: Support the manifold while removing the screws.

6. Disconnect the ink return line from the back of the manifold.
7. Remove the manifold from the nest.
8. Unscrew the filter from the manifold.
9. Install a new filter.

Caution: Discard the used filter; an air ingestion filter cannot be cleaned.

Figure 5.147 Air ingestion filter location, 5122 printhead



Bypass Printhead Assembly

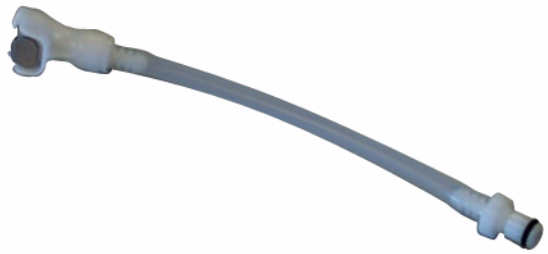
5240 and 5122

The bypass printhead assembly is a service component used for the 5240 and 5122 printheads. The FRU number is printhead specific (see Table 5.30). Figure 5.148 shows the 5240 bypass printhead assembly.

Table 5.30 Bypass printhead assembly FRUs

Printer	FRU Number	Notes
5240	0178584	BYPASS PRINTHEAD ASSY (240)
5122	0188464	BYPASS ASSY. 5122

Figure 5.148 Printhead bypass assembly, 5240 printhead



The bypass assembly connects between the inlet and outlet quick-disconnects on the manifold to isolate the printhead for certain diagnostics procedures (see “Printhead Procedures” in Chapter 1, “Diagnostics”). Replace a bypass assembly if it is damaged or otherwise rendered unserviceable.

Charge Driver Board

The 5120 and 5122 printheads each contain one of the following FRUs:

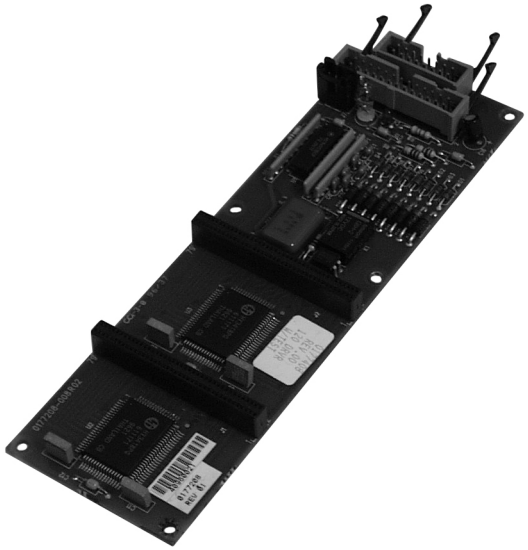
- 5120 charge driver board
- 5122 charge driver board.

The following sections describe how to replace these two components.

5120 Charge Driver Board

The 5120 charge driver board (P0178572) is used in the 5120 printhead (see Figure 5.149). The 5120 charge driver board does not require configuration. The board layout is provided for general reference (see Figure 5.151).

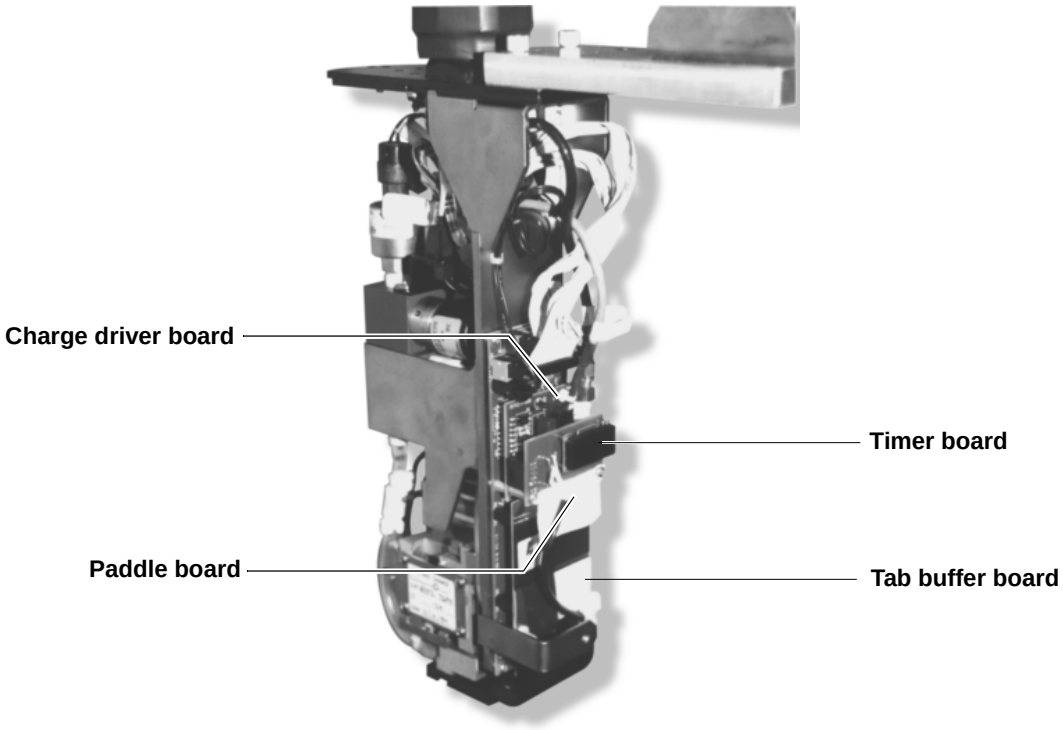
Figure 5.149 5120 charge driver board (P0178572)



Use the following procedure to replace the 5120 charge driver board:

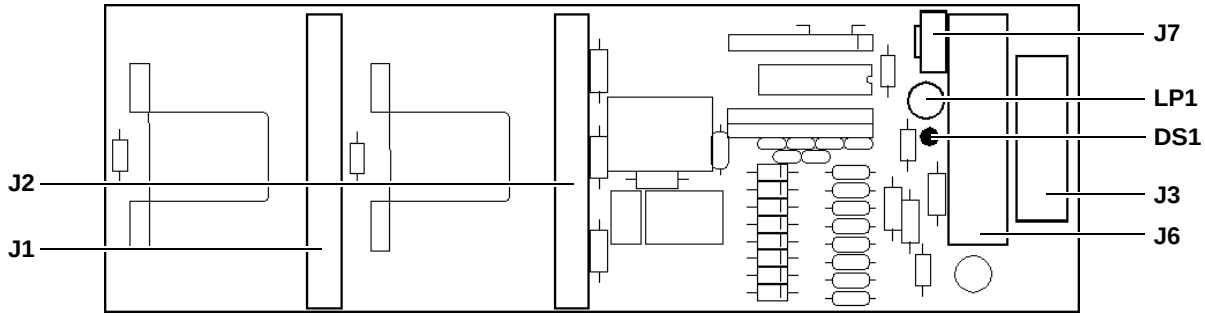
1. Locate the charge driver board on the printhead housing (see Figure 5.150). Disconnect the cables shown in Figure 5.151.

Figure 5.150 Charge driver board location, 5120 printhead



2. Disconnect all the cables identified in Figure 5.151.

Figure 5.151 5120 charge driver board layout



3. Remove the two screws securing the timer board to the tab buffer board (through standoffs).
4. Remove the tab buffer board from the charge driver board.
5. Remove the paddle board from the charge driver board.
6. Remove the four screws and the two standoffs securing the charge driver board to the printhead housing, and then remove the board.

   The double standoffs separate the timer board and charge driver board.

7. Install the replacement board by reversing the removal procedure.

5122 Charge Driver Board

The 5122 charge driver board (0188382) is used in the 5122 printhead (see Figure 5.152). The 5122 charge driver board does not require configuration. The board layout is provided for general reference (see Figure 5.153).

Figure 5.152 5122 charge driver board (0188382)

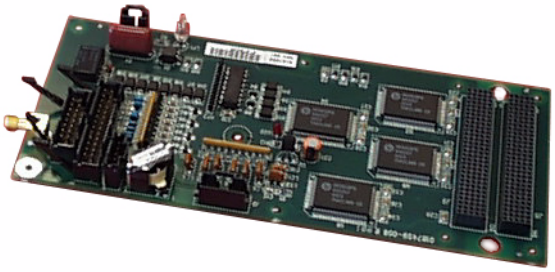
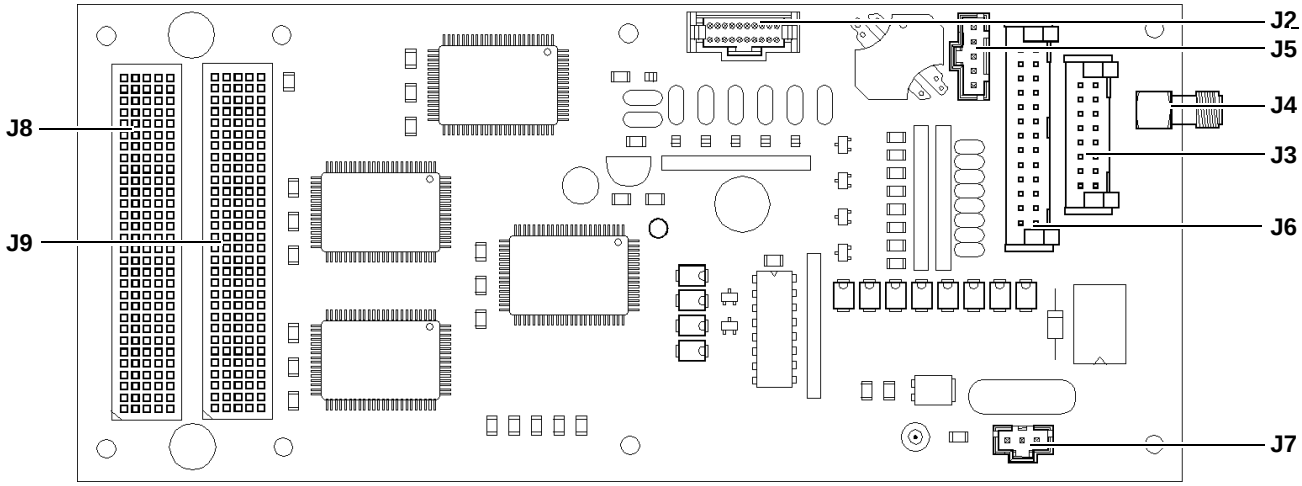


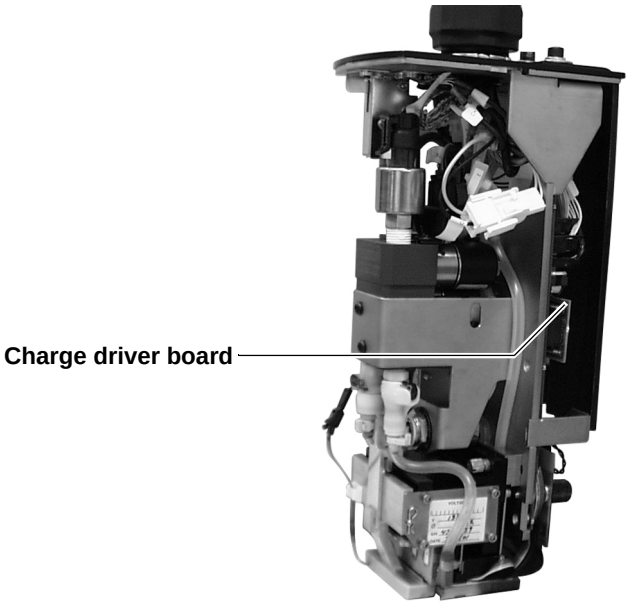
Figure 5.153 5122 charge driver board layout



Use the following procedure to replace the 5122 charge driver board:

1. Locate the charge driver board mounted on the printhead housing (see Figure 5.154).

Figure 5.154 Charge driver board location, 5122 printhead



2. Loosen the knurled knobs securing the flex cable board to the charge driver board.
3. Disconnect all cables shown in Figure 5.153.
4. Remove the six screws securing the board to the printhead housing.

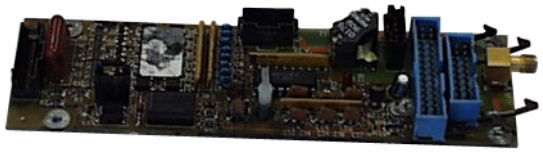
   Retain the screws and standoffs for use with the replacement board.
5. Install the replacement board by reversing the removal procedure.

Charge Driver Interface Board

5240 Only

The charge driver interface board (P0178573) is a component of the 5240 printhead (see Figure 5.155).

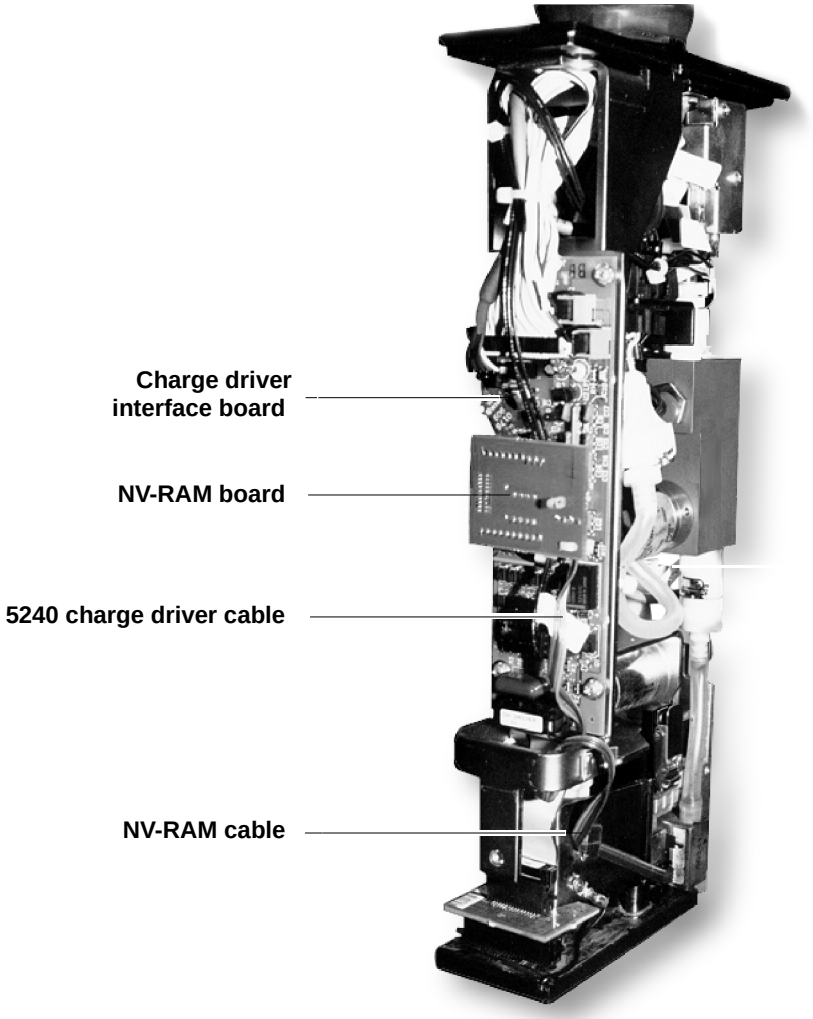
Figure 5.155 5240 charge driver interface board (P0178573)



Use the following procedure to replace the charge driver interface board.

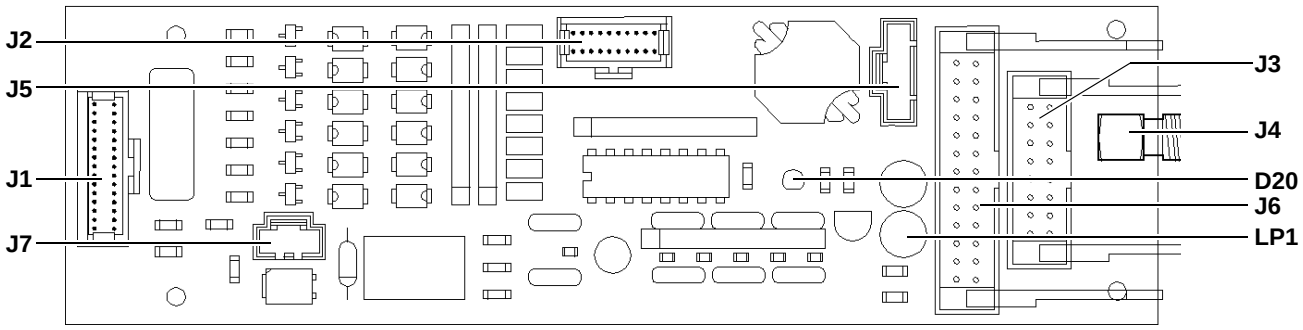
1. Locate the charge driver interface board mounted on the printhead frame (see Figure 5.155).
2. Disconnect the NV-RAM board; it is not a FRU, but part of the resonator assembly (0176801) in the 5120 and 5240 printheads, and the droplet generator (0187763) in the 5122 printhead.

Figure 5.156 Charge driver interface board, 5240 printhead



3. Disconnect ribbon cable J1 connecting the charge driver interface board to the printhead assembly.
4. Disconnect all the cables connecting the charge driver interface board to the printhead housing (see Figure 5.157).

Figure 5.157 Charge driver interface board layout



5. Remove the four screws securing the charge drive interface board to the printhead housing.
6. Install the replacement board by reversing the removal procedure.

Eyelid Assembly

Each 5000 series printhead has a unique eyelid assembly. This section describes how to remove the following three FRUs:

- 5120 eyelid assembly
- 5240 eyelid assembly
- 5122 eyelid assembly.

See also the illustrated procedures in the printhead *Replacement Instructions* (0113480).

The 5120 and current 5240 eyelid assemblies consists of the following components:

- Eyelid with seal (and heater cable in the 5240)
- Actuator
- Eyelid pin (also called the pivot pin or pivot shaft)
- Clips.

Note: All 5240 printheads (new and RGR) are tested with the eyelid assembly attached, and the eyelid has a serial number. Always return the eyelid with the printhead.

The 5122 eyelid assembly consists of the following components:

- Eyelid
- Heater cable.

The eyelid cotter pin is part of the printhead assembly.

5120 Eyelid Assembly

The 5120 eyelid assembly (0178560) is a component of the 5120 printhead. Use the following procedure to replace the 5120 eyelid assembly:

1. Locate the eyelid assembly attached to the printhead housing directly behind the printhead assembly (see Figure 5.158).
2. Remove the cotter pin securing the eyelid pin.
3. Pull out the eyelid pin.
4. Remove the eyelid, plunger, and attached actuator arm.

   The plunger and arm will separate from the eyelid. Retain the eyelid, plunger, and arm; install them with the replacement eyelid.

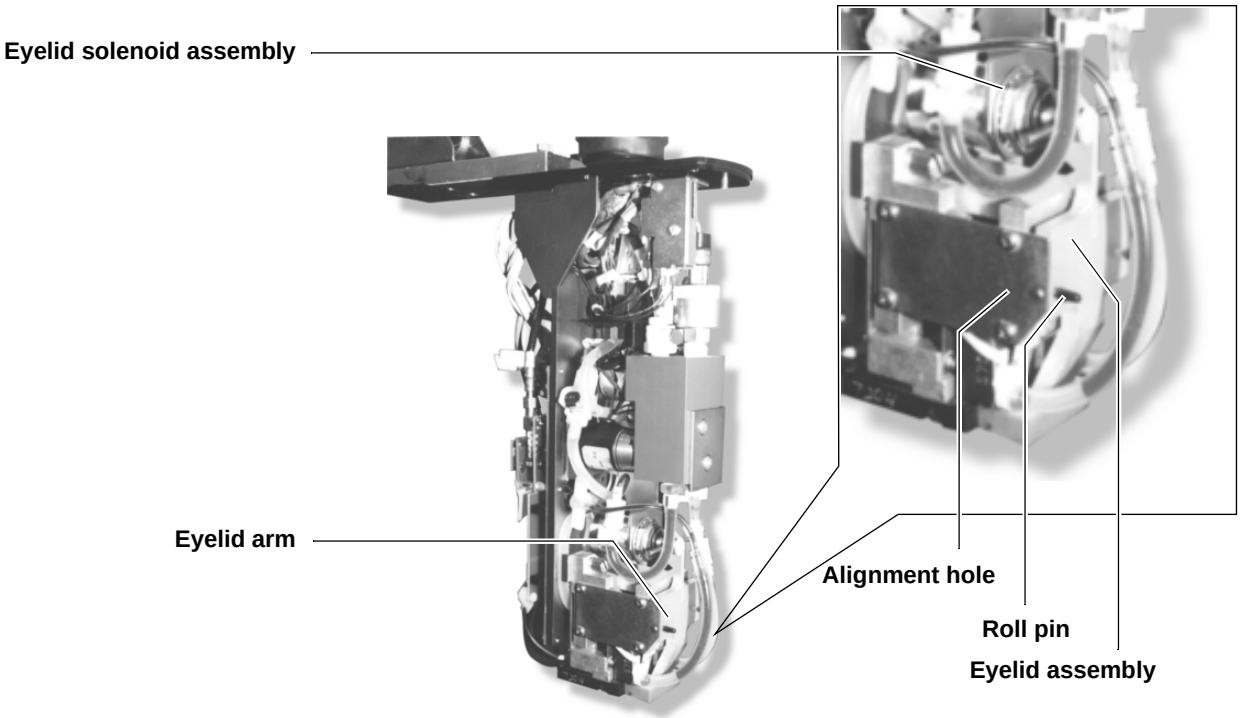
Note: On older 5120 printheads, squeeze the retaining pins to release the eyelid assembly and pull it out (see Figure 5.158).

5. To install the replacement eyelid assembly, position the eyelid assembly on the eyelid solenoid and line up the roll pins with the holes on the printhead side of the eyelid mounting brackets.

Caution: Ensure that the eyelid springs are seated into the holes on the sides of the printhead frame. Improperly seated springs will jam the eyelid.

6. Verify that the eyelid assembly is properly installed by pushing on the eyelid arm to manually open and close the eyelid assembly. If the eyelid arm moves freely, the eyelid assembly is properly installed. If the arm sticks or resists moving, remove the assembly and repeat the installation steps.

Figure 5.158 Early 5120 eyelid assembly (0178560)



5240 Eyelid Assembly

The current 5240 eyelid assembly (0178561) is a component of the current 5240 printhead (see Figure 5.159).

Use the following procedure to replace the 5240 eyelid assembly:

1. Locate the eyelid assembly attached to the printhead housing directly behind the printhead assembly (see Figure 5.159).
2. Remove the eyelid heater connector.
3. Remove the cotter pin securing the eyelid pin.
4. Remove the eyelid pin.
5. Remove the cotter pin from the plunger pin.
6. Remove the plunger pin.
7. Remove the eyelid.

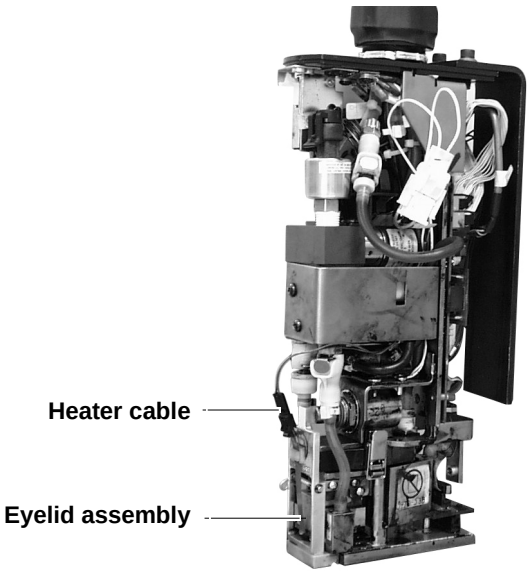
   Retain the plunger with its retaining pin and cotter pin; install them with the replacement eyelid.

8. To install the replacement eyelid assembly, reverse the removal procedure.

Caution: Ensure that the eyelid springs are seated into the holes on the sides of the printhead frame. Improperly seated springs will jam the eyelid.

9. Verify that the eyelid assembly is properly installed by pushing on the eyelid arm to manually open and close the eyelid assembly. If the eyelid arm moves freely, the eyelid assembly is properly installed. If the arm sticks or resists moving, remove the assembly and repeat the installation steps.
10. Connect the eyelid heater cable.

Figure 5.159 5240 eyelid assembly, 5240 printhead



5122 Eyelid Assembly

The 5122 eyelid assembly (0188575) is a component of the 5122 printhead (see Figure 5.160).

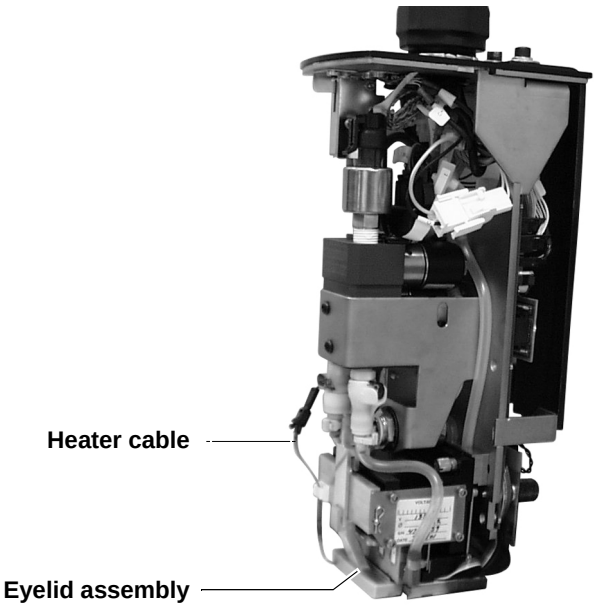
Figure 5.160 Eyelid assembly, 5122 printhead (0188575

Use the following procedure to replace the 5122 eyelid assembly:

1. Locate the eyelid assembly attached to the attached to the eyelid solenoid and printhead assembly of the 5122 printhead (see Figure 5.161).
2. Disconnect the 2-wire heater cable.
3. Remove the cotter pin securing the eyelid pin.
4. Remove the eyelid pin.
5. Remove the eyelid, plunger, and attached actuator arm.

   The plunger and arm will separate from the eyelid. Retain the plunger and arm for use with the replacement eyelid.
6. Install the replacement eyelid assembly by reversing the removal procedure.

Figure 5.161 Eyelid assembly location, 5122 printhead



Eyelid Seal

5120 Only

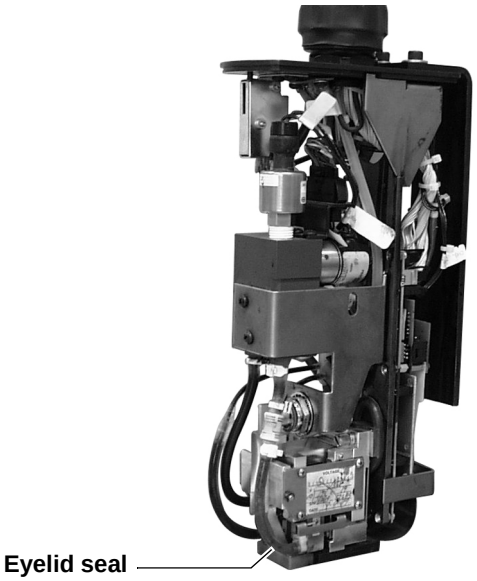
The eyelid seal (0178562) is a component of the 5120 printhead (see Figure 5.162). The seal has manufacturing part number 0138929.

The eyelid seal for the 5122 printhead and heated eyelid seal for the 5240 printhead are not a separate FRUs.

Figure 5.162 Eyelid seal, 5120 printhead (0178562)

The rubber eyelid seal mounts over the eyelid armature (see Figure 5.163). Replace a seal that is damaged. If the seal is torn or deteriorates, the printhead will leak.

Figure 5.163 Eyelid seal location, 5120 printhead



Eyelid Solenoid

Each 5000 series printhead has a unique eyelid solenoid assembly. This section describes how to remove the following three FRUs:

- 5120 eyelid solenoid
- Early 5240 eyelid solenoid
- Current 5240 and 5122 eyelid solenoid.

The same solenoid armature, plunger, and washer are used in all three printheads. The 5120 and early 5240 solenoid FRUs include the armature and plunger, while the FRU for the current 5240 and 5122 printheads is just the solenoid. The solenoid washer (0183433) is available as a separate FRU (see Figure 5.166), but a solenoid armature and plunger are not. Although the three solenoid assemblies are very similar, different procedures are required because the mounting differs between printheads.

5120 Eyelid Solenoid

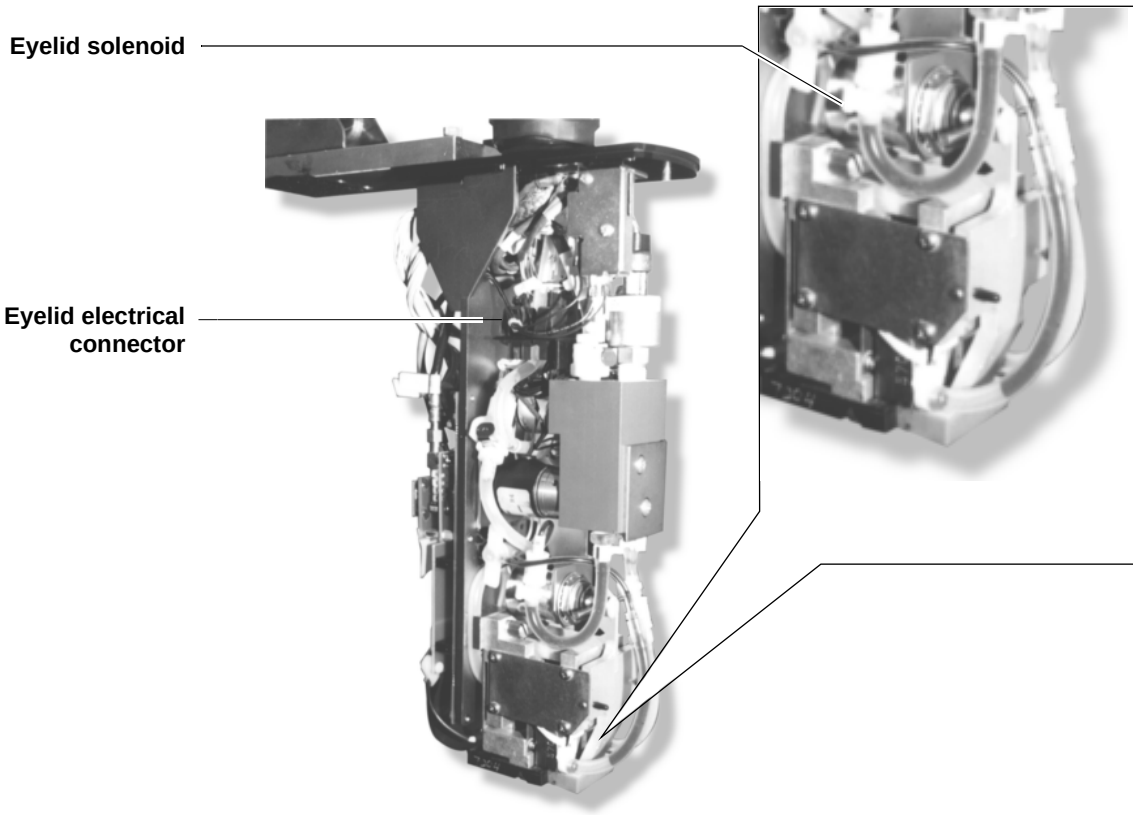
The 5120 eyelid solenoid (0181772) is a component of the 5120 printhead; the FRU includes the eyelid armature and plunger (see Figure 5.164).

Figure 5.164 5120 eyelid solenoid assembly (0181772)

Use the following procedure to the replace the 5120 eyelid solenoid:

1. Locate the eyelid solenoid attached to the printhead housing (see Figure 5.165).
2. Remove the printhead.
3. Disconnect the eyelid electrical connector (the smaller of the two connector housings mounted to the printhead manifold).
4. Remove the nut and washer securing the eyelid solenoid to the printhead housing, and then remove the solenoid.
5. Install the replacement solenoid by reversing the removal procedure.

Figure 5.165 5120 eyelid solenoid location



Early 5240 Eyelid Solenoid

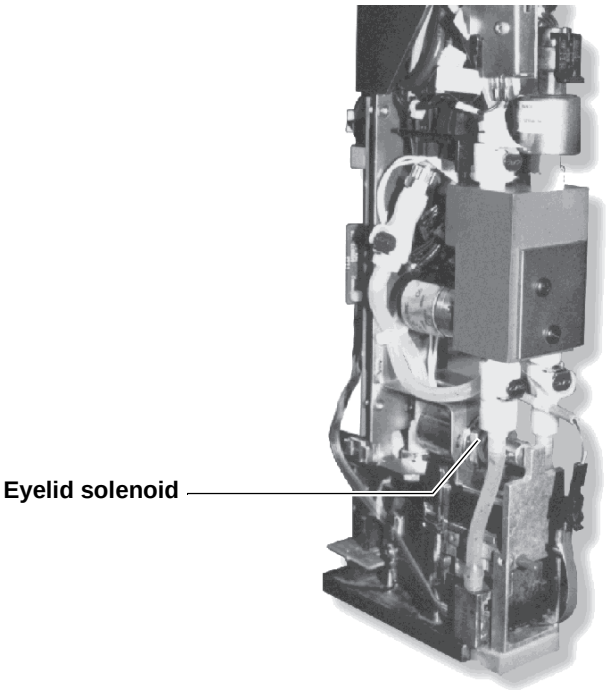
The early 5240 eyelid solenoid (0178564) is a component of 5240 printheads shipped with printers having serial numbers lower than 3000; the FRU includes the plunger (see Figure 5.166).

Figure 5.166 Early 5240 eyelid solenoid (0178564)

Use the following procedure to replace the eyelid solenoid:

1. Locate the solenoid above the printhead assembly mounted to the printhead housing (see Figure 5.167). The armature connects to the plunger that plugs into the solenoid.
2. Remove the eyelid armature and plunger.
3. Remove the printhead.
4. Remove the 2-wire cable to the eyelid solenoid from the printhead components connector. Use a small, flat-blade screwdriver to spread the connector and pull the 2-wire shell out of the connector. Put the 2-wire connector for the replacement back into the same position
5. Wiggle the printhead mounting plate loose and take it off of its retaining pins.
6. Remove the solenoid from its bracket.
7. Install the replacement solenoid by reversing the removal procedure.

Figure 5.167 Eyelid solenoid, early 5240 printhead



Current 5240 and 5122 Eyelid Solenoid

The eyelid solenoid assembly for the current 5240 printhead and the 5122 printhead (0188034); the FRU is just the solenoid (see Figure 5.168).

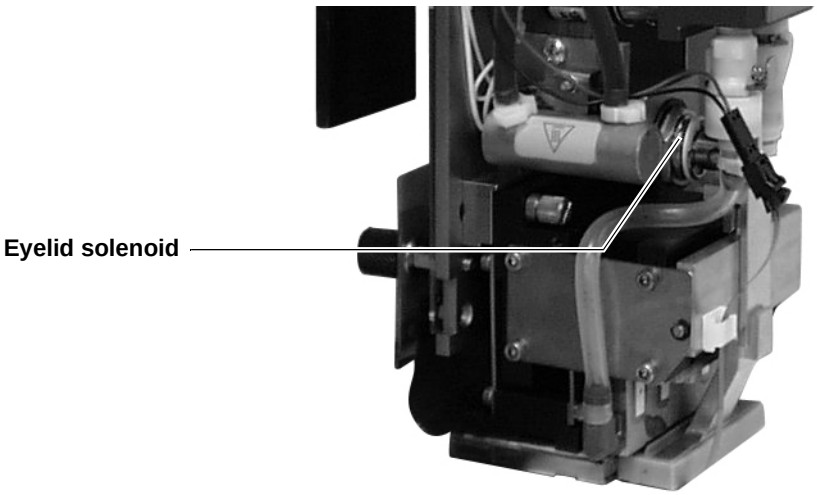
Figure 5.168 5122 eyelid solenoid assembly

Use the following procedure to replace the 5122 eyelid solenoid:

1. Locate the solenoid above the printhead assembly mounted to the printhead housing (see Figure 5.169). The solenoid armature connects to the plunger that plugs into the solenoid.
2. Remove the eyelid armature and plunger.
3. Remove the printhead.
4. Remove 2-wire cable to the eyelid solenoid from the printhead components connector.

   Use a small, flat-blade screwdriver to spread the connector and pull the 2-wire shell out of the connector. Put the 2-wire connector for the replacement back into the same position
5. Wiggle the printhead mounting plate loose and take it off of its retaining pins.
6. Remove the solenoid from its bracket.
7. Install the replacement solenoid assembly by reversing the removal procedure.

Figure 5.169 Eyelid solenoid, 5122 printhead



Filter Clip

5120 Only

The filter clip (0182528) is a component of the 5120 printhead (see Figure 5.170). The clip holds inlet line filter in place against the printhead housing (frame).

Figure 5.170 Filter clip (0182528), 5120 printhead

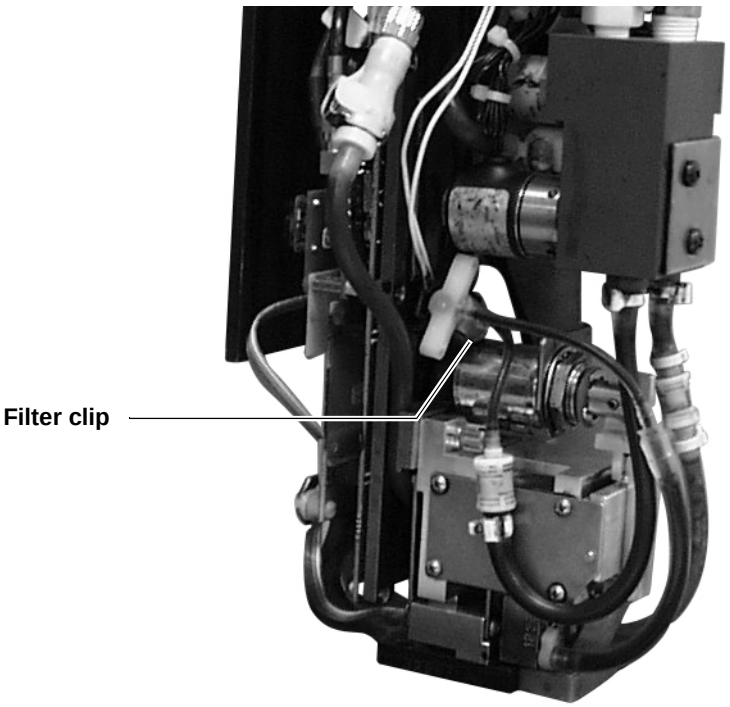
Use the following procedure to replace the clip:

1. Locate the clip on the printhead frame holding the inline filter on the inlet line (see Figure 5.171).
2. To replace a broken or damaged clip,

   If the filter is stiff, slip the clip filter out the top or bottom of the clip rather than snapping it out of the opening in the clip.

3. Remove the single Phillips screw (and star washer) securing the clip to the printhead frame. Retain the screw and washer for use with the replacement clip.
4. Install the replacement clip by reversing the removal step.

Figure 5.171 Filter clip location, 5120 printhead



Ink Condensation Heater

Current 5240 and 5122 Only

The ink condensation heater (0182525) is a component of the current 5240 and 5122 printheads (see Figure 5.172).

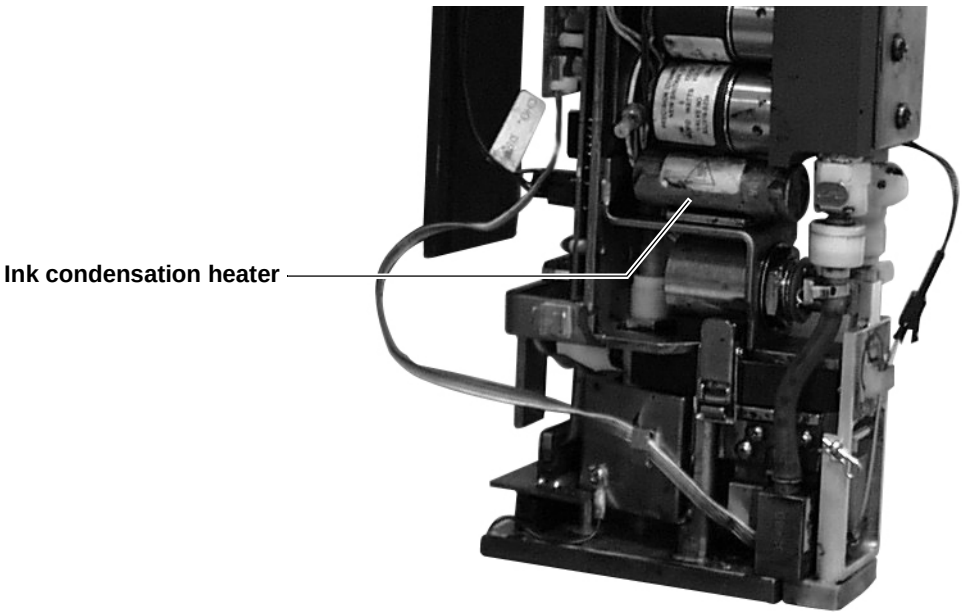
Figure 5.172 Ink condensation heater (0182525)

Use the following procedure to replace the ink condensation heater:

1. Locate the heater mounted on the inlet side of the manifold just below the anti-siphon valve (see Figure 5.173).
2. Disconnect the condensation heater cable (2-wire) coming from the umbilical.
3. Disconnect both tubes from the heater.

   Snap apart the plastic clips holding the tubes.
4. Remove the two Phillips screws securing the heater to the nest.
5. Install the replacement heater by reversing the removal procedure.

Figure 5.173 Ink condensation heater location, 5240 printhead



Interlock Switch

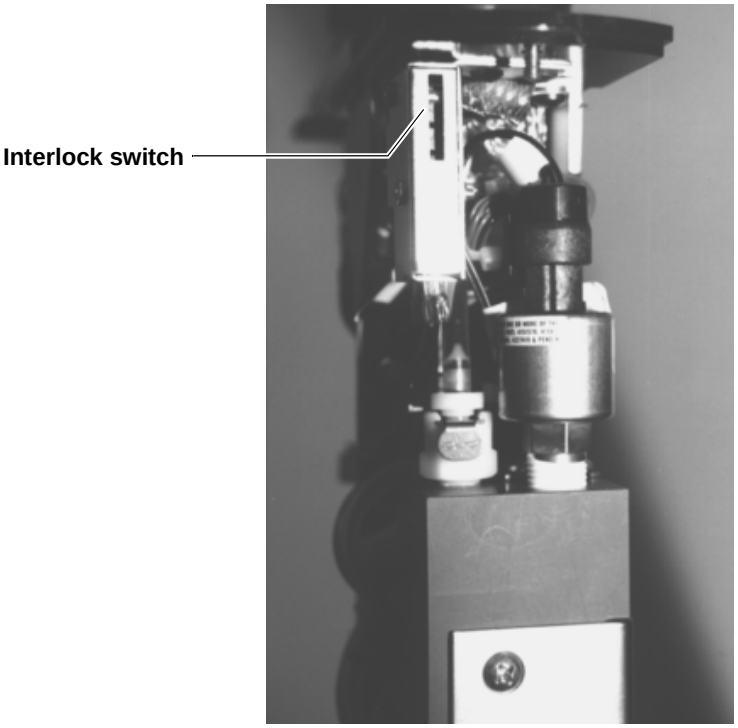
The printhead interlock switch (0178588) is a component of all 5000 series printheads (see Figure 5.174).

Figure 5.174 Interlock switch (0178588)

Use the following procedure to the replace the interlock switch:

1. Locate the interlock switch mounted to the umbilical end of the printhead housing (see Figure 5.175)
2. Remove the two screws securing the switch to the housing.
3. To install the replacement switch, align the slot on the interlock switch with the two holes on the housing.
4. Position the switch as close to the edge of the housing as possible and secure it with two screws.

Figure 5.175 Interlock switch location, 5120 printhead



Printhead Cables

Two printhead cables are FRUs. The following procedures describe how to locate and replace these cables:

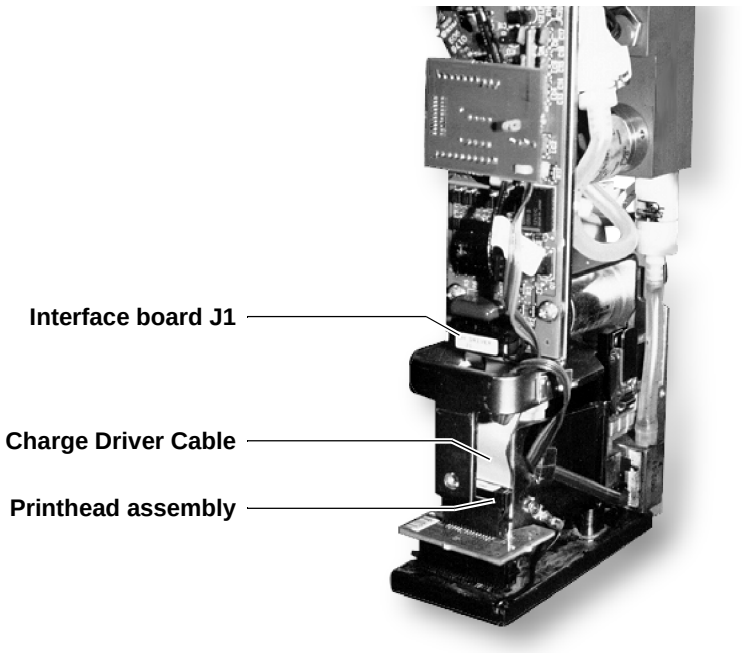
- 5240 charge driver cable
- Transducer jumper cable.

5240 Charge Driver Cable

The charge driver cable (0178589) is a component of the 5240 printhead (see Figure 5.176). The cable connects J1 on the interface board to the printhead assembly (see Figure 5.177). This cable has manufacturing part number 0177481.

Figure 5.176 5240 charge driver cable

Figure 5.177 Charge driver cable location, 5240 printhead



Transducer Jumper Cable

The transducer jumper cable (0178650) is a component of all 5000 series printheads (see Figure 5.178). This cable has manufacturing part number 0139848.

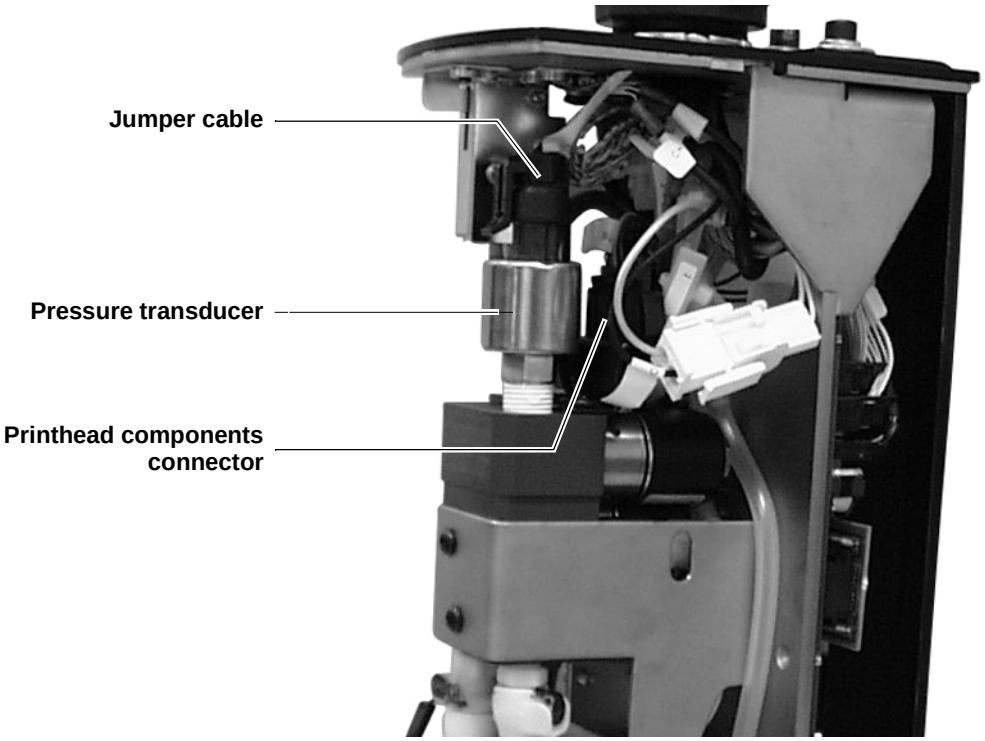
Figure 5.178 Transducer jumper cable (0178650)

Use the following procedure to replace this cable:

1. Locate the transducer jumper cable connecting the pressure transducer to the printhead components connector housing (see Figure 5.179).
2. Remove the printhead manifold.

   The pressure transducer mounts on the top of the printhead manifold.
3. Unplug the cable from the top of the transducer.
4. Snap the 4-wire transducer cable out of the printhead components connector.
5. To install the replacement cable, reverse the removal procedure.

Figure 5.179 Transducer jumper cable location, 5122 printhead



Printhead Manifold

The printhead manifold is one of three different FRUs (see Table 5.31).

Table 5.31 Printhead manifold FRUs, 5000 series printers

Printer	FRU Number	Notes
5120	P0180717	MANIFOLD ASSY-PRINTHEAD (120) PKGD
Early 5240	P0180718	MANIFOLD ASSY-PRINTHEAD (240) PKGD
Current 5240 and 5122	P0182524	MANIFOLD ASSY-PRINTHEAD (240N) FRU

This section describes how to remove the following FRUs:

- 5120 and Early 5240 printhead manifold
- Current 5240 and 5122 printhead manifold.

Different procedures are required for each manifold because the printhead assembly components and mountings differ.

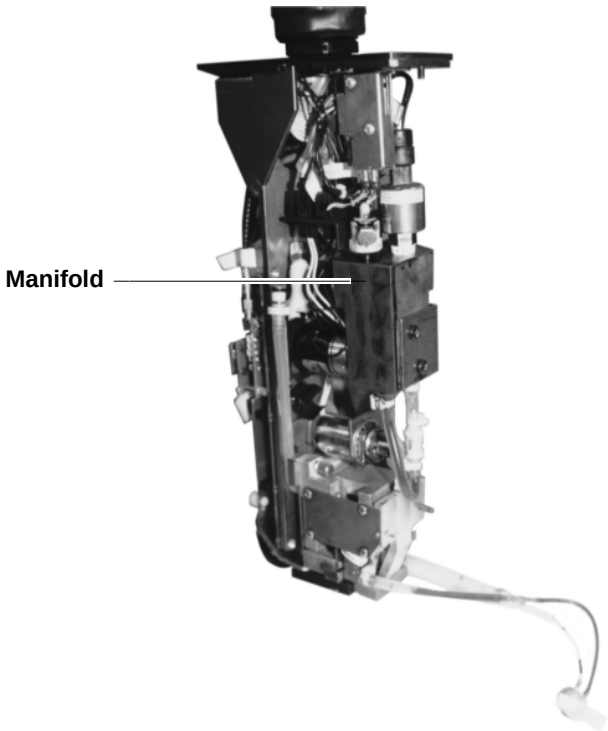
5120 and Early 5240 Printhead Manifold

The printhead manifolds in the 5120 and early 5240 are similar, but separate FRUs (see Table 5.31).

Use the following procedure to replace either printhead manifold: ():

1. Locate the printhead manifold mounted on the printhead assembly side (front) of the printhead housing (see Figure 5.180).
2. Disconnect the inlet and outlet tubes and connect them together (see Figure 5.180).

Figure 5.180 5120 printhead manifold location



3. Disconnect the line between the printhead assembly and the manifold (it is a quick-disconnect fitting).
4. Unplug the connector from the eyelid connector housing.
5. Unplug the connectors from the printhead components connector housing.

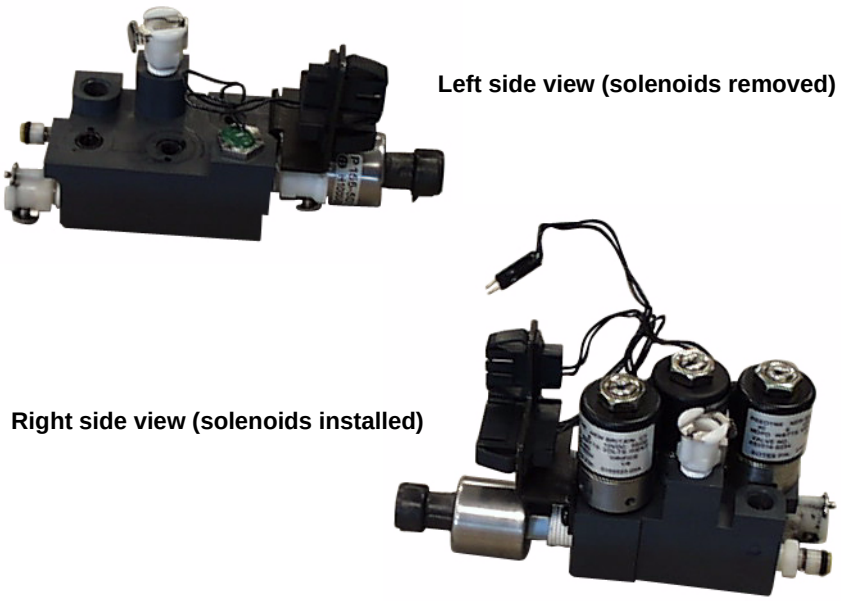
   The cross-flush cable goes to pins 1 and 2. The anti-siphon cable goes to pins 2 and 4. The thermistor connector goes to pins 5 and 6. The transducer cable goes to pins 7 through 10.

6. Remove the two screws securing the manifold to the printhead housing.
7. Install the replacement manifold by reversing the removal procedure.

Current 5240 and 5122 Printhead Manifold

The printhead manifold in the current 5240 and 5122 printhead (P0182524) is the same FRU (see Figure 5.180).

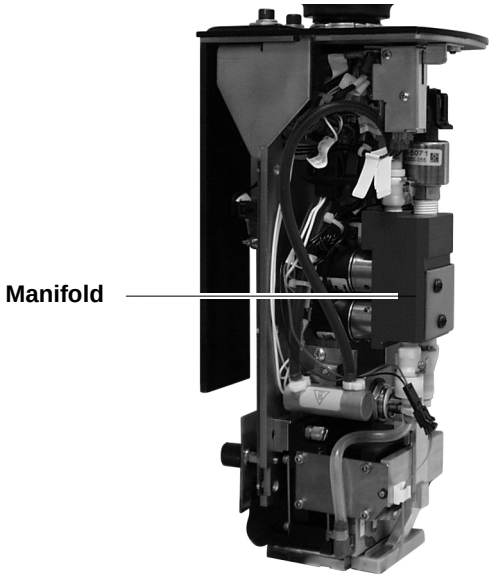
Figure 5.181 Printhead manifold, current 5240 and 5122 (P0182524)



Use the following procedure to replace the printhead manifold:

1. Locate the printhead manifold mounted on the printhead assembly side (front) of the printhead housing (see Figure 5.182).

Figure 5.182 5122 printhead manifold location



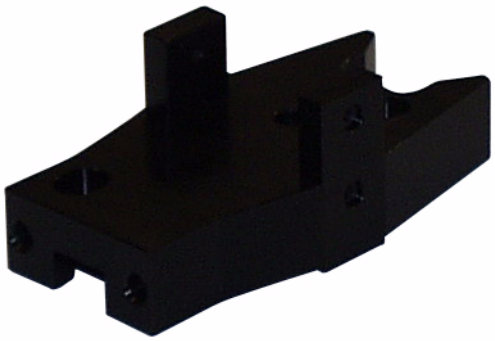
2. Disconnect the inlet and outlet tubes from the manifold.
3. Disconnect the manifold and printhead assembly (a quick-disconnect fitting).
4. Unplug the eyelid connector from its housing.
5. Unplug the printhead connector from its housing.
6. Remove the two screws securing the manifold to the printhead housing (frame).

Printhead Nest

5240 Only

The printhead nest (0178570) is the black plastic block that the 5240 printhead assembly mounts on (see Figure 5.183).

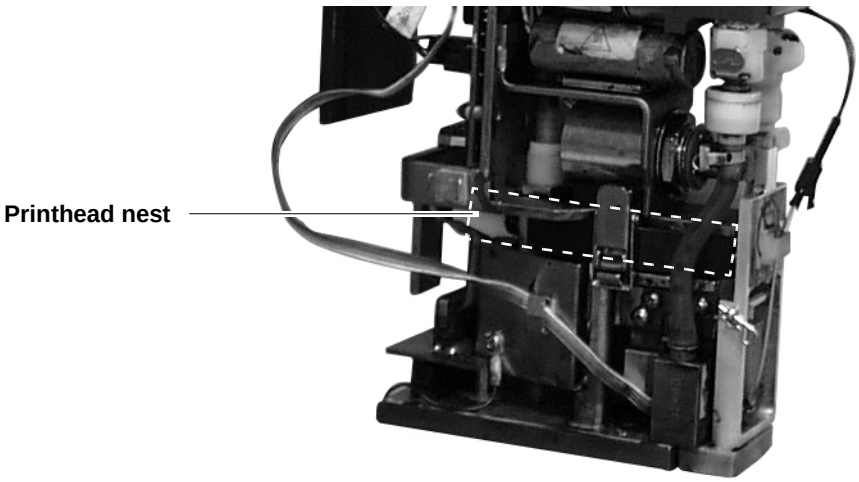
Figure 5.183 Printhead nest, 5240



Use the following procedure to replace the printhead nest:

1. Locate the nest connected to the umbilical housing (see Figure 5.184).
2. Remove the printhead assembly.
3. Remove the two Phillips screws securing the nest to the printhead frame and umbilical housing.
4. Install a replacement nest by reversing the removal procedure.

Figure 5.184 Printhead nest location, 5240 printhead



Printheads

The 5000 series printhead should be replaced only after all efforts to correct the print quality or startup problem have been attempted and failed (see the printer *Operator's Guide*).

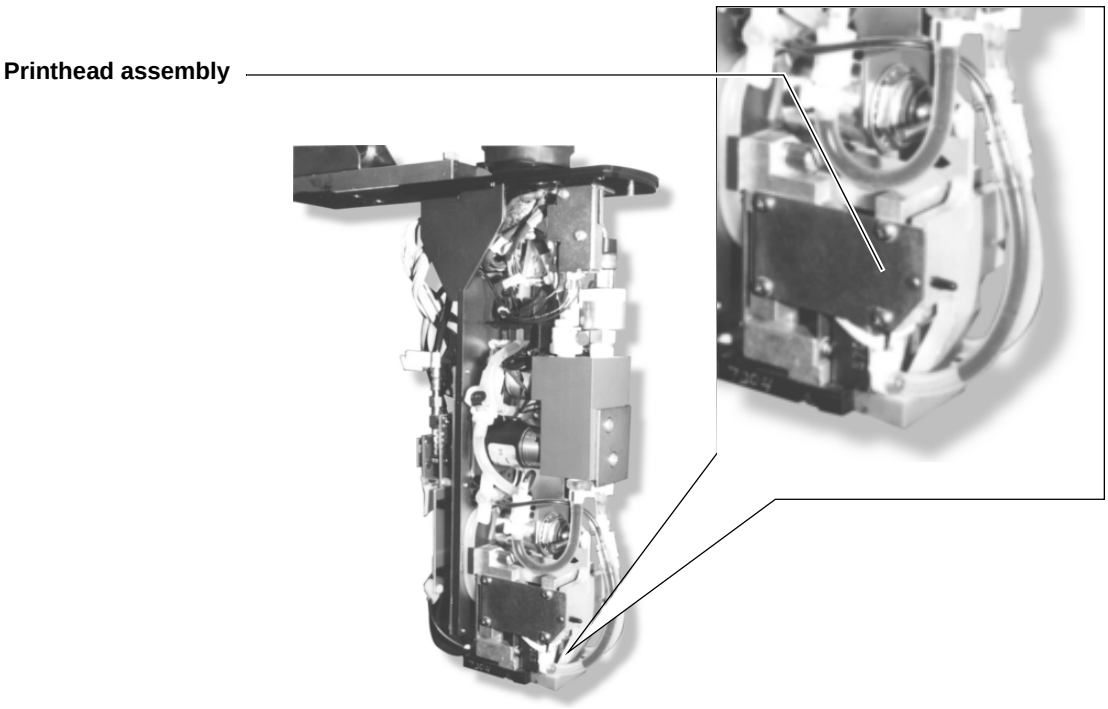
Printheads can be refurbished or new. A refurbished, or RGR printhead is identified by a PH prefix on its FRU number. An RGR printhead is shipped only to its original owner (customer). For information on printhead warranty terms and conditions, see the sales contract for the printer, or contact technical support (see "Scope").

Instructions are shipped with all printheads; refer to those instructions for the printhead replacement procedure. A failed printhead can be replaced with a new printhead rather than a rebuilt printhead FRU; use the same procedure for replacing new and RGR printheads.

5120 Printhead

The current 1", 120-dpi printhead assembly is available new (0139750) or as an RGR (PH0139750); it is mounted to the 1" umbilical housing (see Figure 5.185). For the replacement procedure and additional information, see the printhead *Replacement Instructions* and *Packing Instructions*.

Figure 5.185 5120 printhead assembly (PH0139750)



5240 Printhead

The current 1", 240-dpi printhead assembly is available new (P0180000) or an RGR (PH0181000); it is mounted to the printhead nest (see Figure 5.186). For the replacement procedures, see the printhead *Replacement Instructions* and *Packing Instructions*.

Figure 5.186 Current 5240 printhead assembly (PH0181000)

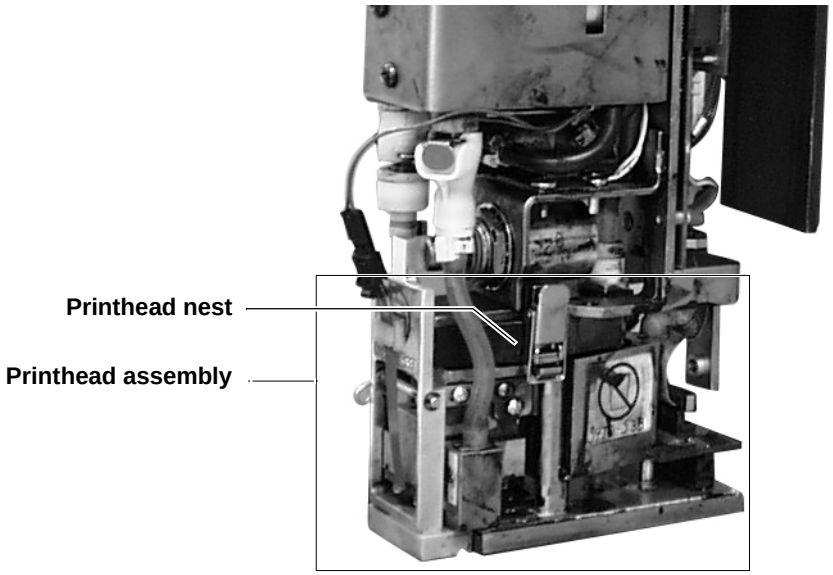
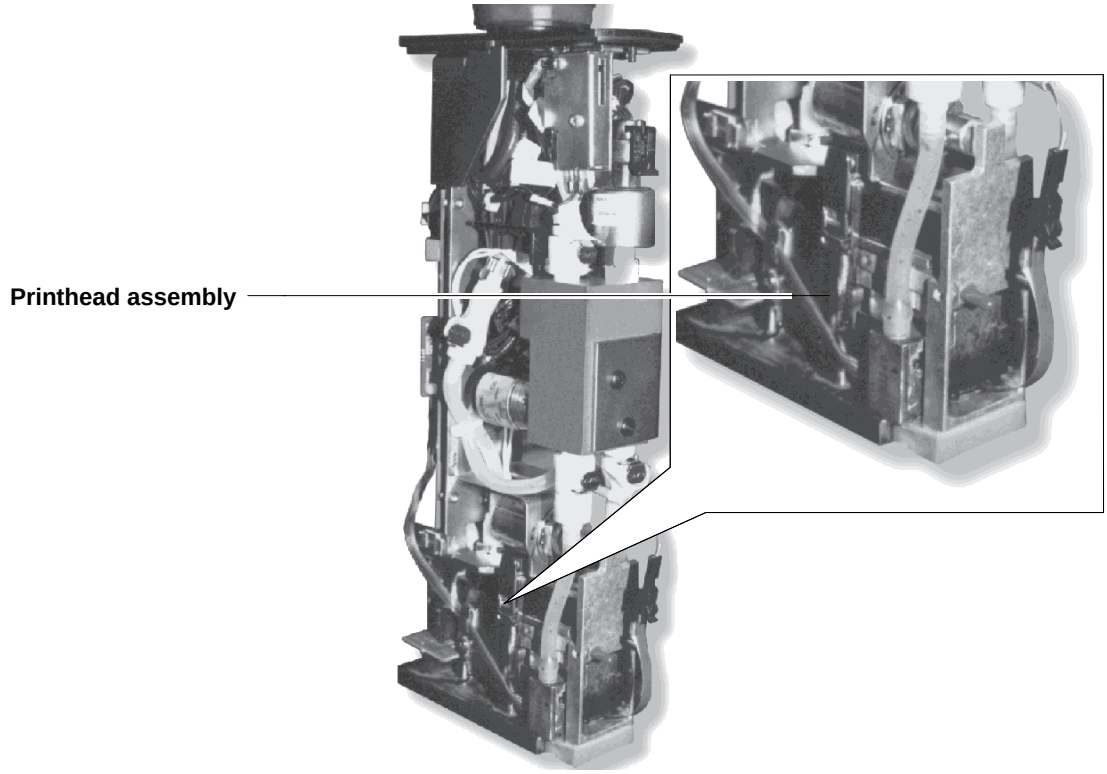


Figure 5.187 shows the early 5240 printhead assembly.

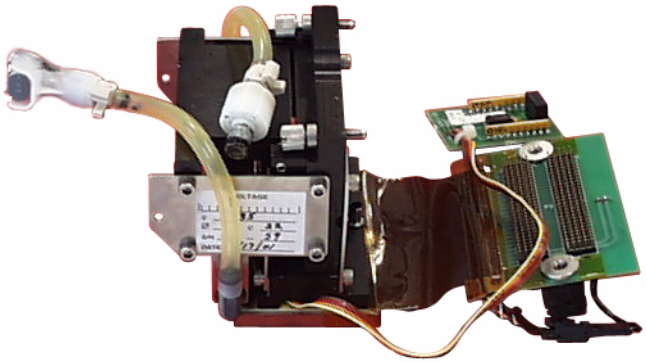
Figure 5.187 Early 5240 printhead assembly



5122 Printhead

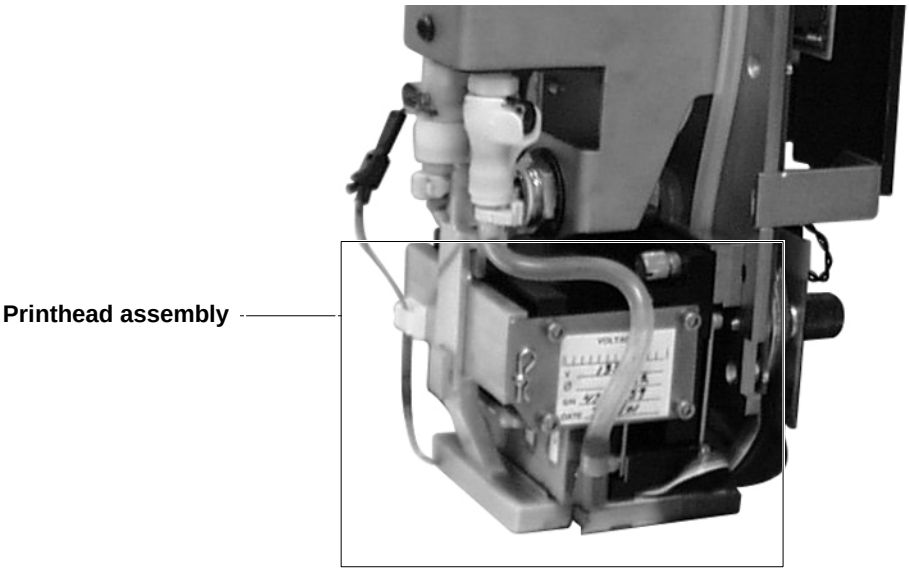
The current 2", 120-dpi printhead assembly as a new or refurbished (RGR) FRU (PH0188200 or P0188200); see Figure 5.188. The 2" printhead assembly is mounted to the 2" umbilical housing (see Figure 5.189).

Figure 5.188 5122 printhead assembly (PH0188200)



The 5122 printhead assembly mounts on the printhead housing (see Figure 5.189). Refer to the *Replacement Instructions* and *Packing Instructions* for the printhead replacement procedure and additional information.

Figure 5.189 5122 printhead assembly location



Printhead Covers

Each 5000 series printhead has a unique pair of covers. This section describes how to remove the following FRUs:

- 5120 and 5240 printhead covers
- 5122 printhead covers.

Although all the printhead covers are different FRUs, they are attached in the same manner. The 5122 covers differ only in size from the two sets of 1" printhead covers.

5120 and 5240 Printhead Covers

The 5120 and 5240 printhead covers (see Table 5.32) can be replaced if lost, damaged or otherwise rendered unusable.

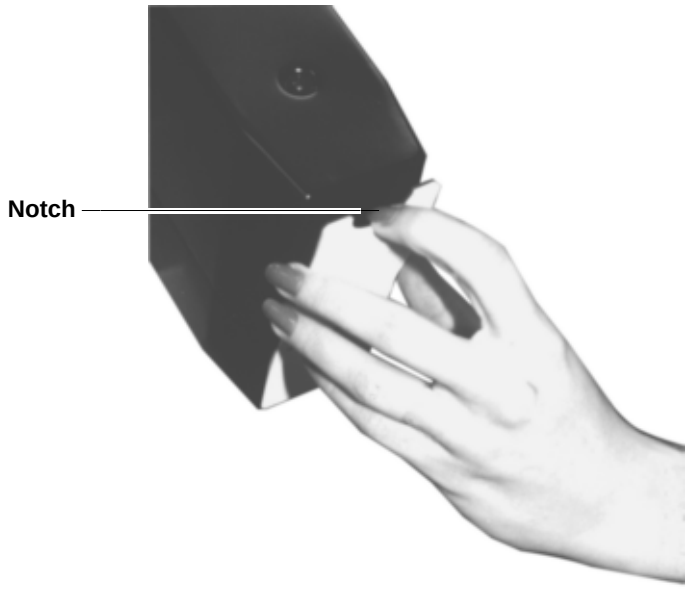
Table 5.32 5120 and 5240 printhead cover FRUs

Printer	FRU Number	Description
5120	0178557	COVER, PH FRONT HOUSING 120
	0178558	COVER, PH REAR HOUSING 120
	0178582	PH BOTTOM COVER ASSY 120
5240	0178555	COVER, PH FRONT HOUSING (240)
	0178556	COVER, PH REAR HOUSING (240)
	0182583	PH BOTTOM COVER ASSY 240

Use the following procedure to the replace the cover:

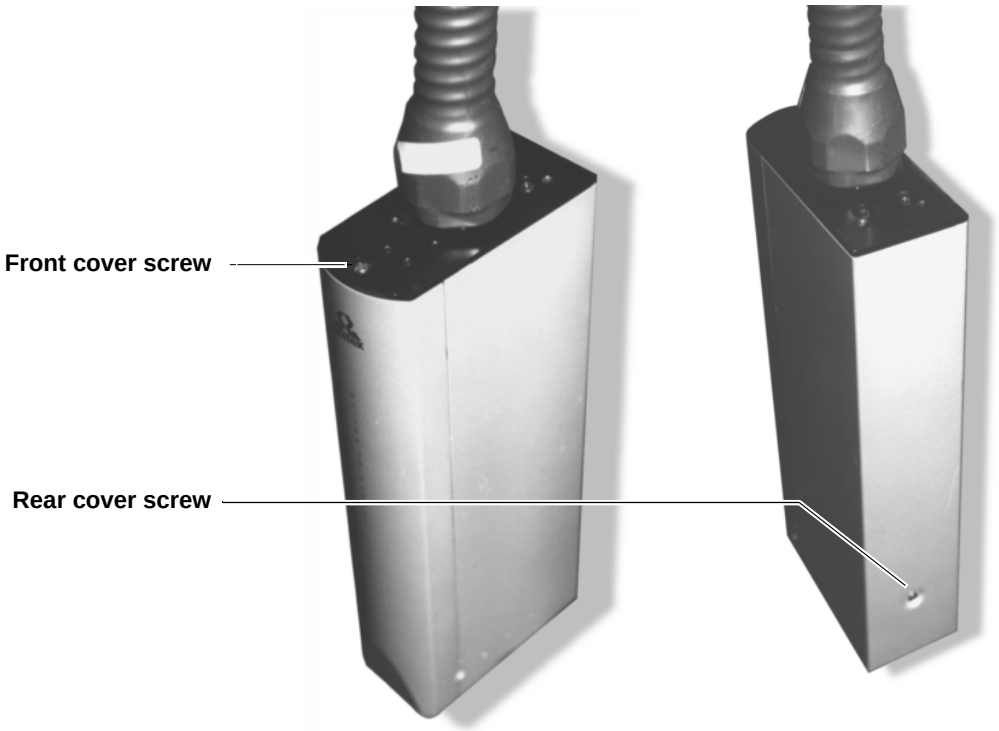
1. Identify which of the three covers requires replacement (see Figure 5.190).
2. To remove the bottom cover, tilt the printhead up to access the underside (see Figure 5.191) and pull the cover off by putting a finger into the notch in the cover.

Figure 5.190 1" printhead bottom cover removal



3. To remove a front or rear cover, loosen the captive screw on the selected cover (see Figure 5.191) and pull the cover straight down.
4. Install the replacement cover by reversing the removal procedure.

Figure 5.191 1" printhead front and rear cover removal



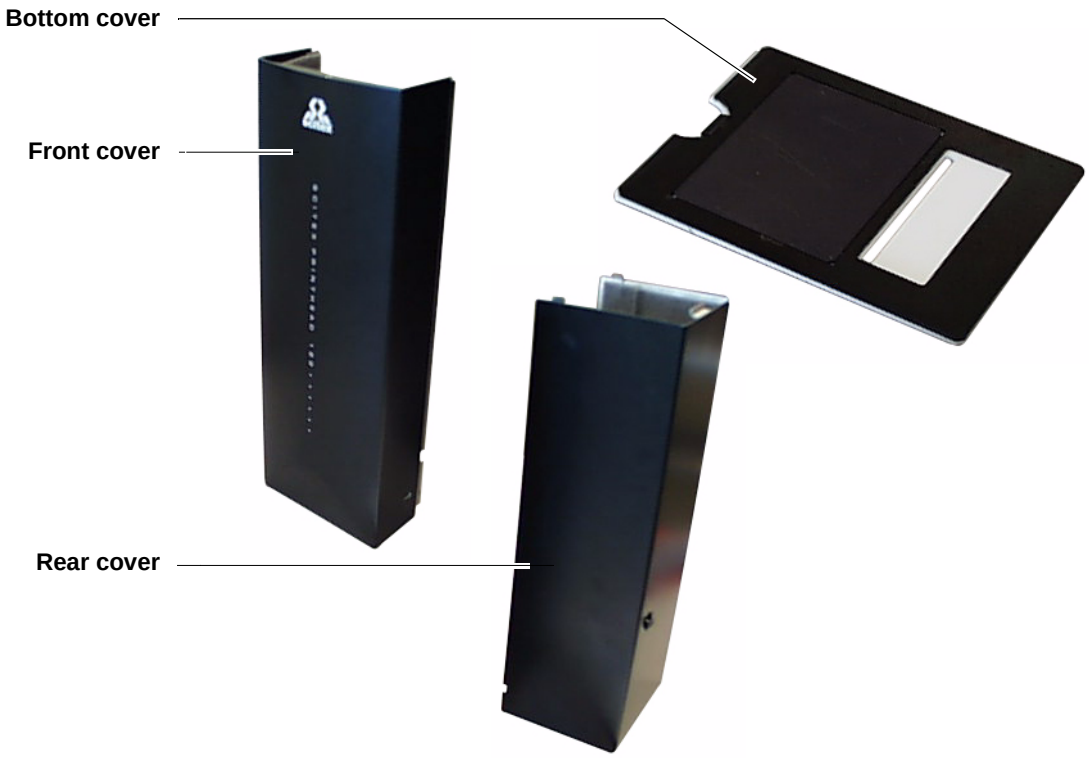
5122 Printhead Covers

The 5122 printhead covers (see Table 5.33 and Figure 5.192) can be replaced if lost, damaged or otherwise rendered unusable.

Table 5.33 5122 printhead cover FRUs

Printer	FRU Number	Description
5122	0188032	FRONT COVER (5122) PRINTHEAD (FRU)
	0188033	BOTTOM COVER (5122) PRINTHEAD (FRU)
	0188035	COVER-REAR P.H. (5122) (FRU)

Figure 5.192 5122 printhead covers



Use the following procedure to the replace the cover:

1. Identify which of the three covers requires replacement (see Figure 5.192).
2. To remove the bottom cover, tilt the printhead up to access the underside (see Figure 5.190) and pull the cover off by putting a finger into the notch in the cover.
3. To remove a front or rear cover, loosen the captive screw on the selected cover (see Figure 5.191) and pull the cover straight down.
4. Install the replacement cover by reversing the removal procedure.

Printhead Shipping Container

The 5120 printhead shipping container (0173668) is available as a FRU for use if the original container is lost, damaged, or destroyed. See the printhead *Packing Instructions* for printhead packing and return procedures.

Figure 5.193 Printhead shipping container, 5120 printhead

Return Orifice Assembly

The return orifice assembly in the 5120 printhead is a different FRU than the assembly in the 5240 and 5122 printheads. This section describes how to replace the following FRUs:

- 5120 return orifice assembly
- 5240 and 5122 return orifice assembly.

Although the return orifice assemblies are different FRUs, they are attached in a similar manner.

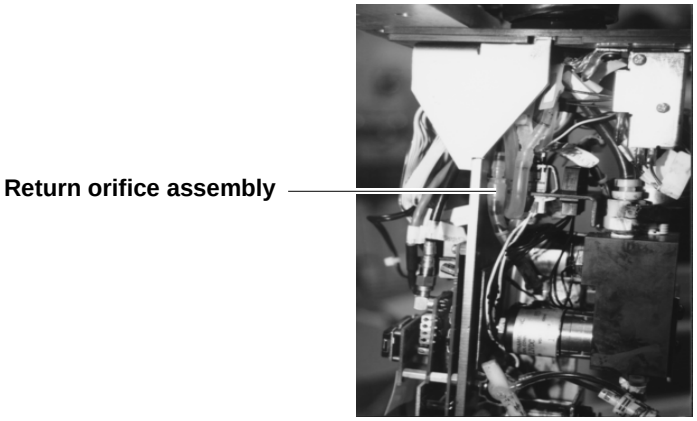
5120 Return Orifice Assembly

The 5120 return orifice assembly (0178644) is a component of the 5120 printhead.

Use the following procedure to replace the return orifice assembly:

1. Locate the return orifice assembly in the 5120 printhead connecting fluid line #2 from the umbilical to the printhead manifold (see Figure 5.194).

Figure 5.194 5120 return orifice assembly location



2. Disconnect the fluid line at the quick disconnect fitting between the anti-siphon solenoid valve and cross-flush solenoid valve.
3. Pull the assembly off the barbed fitting on the tubing of fluid line #2.
4. Install the replacement assembly by reversing the removal procedure.

5240 and 5122 Return Orifice Assembly

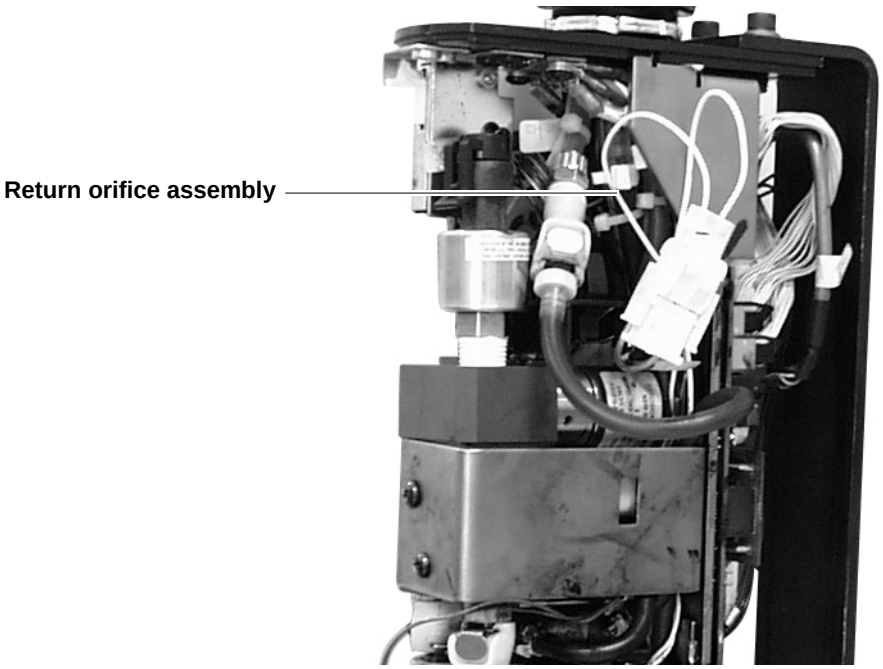
The 5240 and 5122 return orifice assembly (0180246) is a component of both the early and current 5240 printheads, and the 5122 printhead (see Figure 5.195).

Figure 5.195 5240 and 5122 return orifice assembly (0180246)

Use the following procedure to replace the return orifice assembly:

1. Locate the return orifice assembly in the 5120 printhead connecting fluid line #2 from the umbilical to the printhead manifold (see Figure 5.196).
2. Remove the printhead manifold, or loosen it and swing it out of the way.

Figure 5.196 5240 return orifice assembly location



3. Disconnect the fluid line at the quick disconnect fitting between the anti-siphon solenoid valve and cross-flush solenoid valve.
4. Pull the assembly off the barbed fitting on the tubing of fluid line #2.
5. Install the replacement assembly by reversing the removal procedure.

Solenoid Valves

The solenoid valve (0178587) is used in all 5000 series printheads (see Figure 5.197). The same solenoid valve FRU is used to replace any of the following three printhead components:

- Air ingestion valve
- Anti-siphon valve
- Cross-flush valve.

This valve has purchased part number 0102023-034.

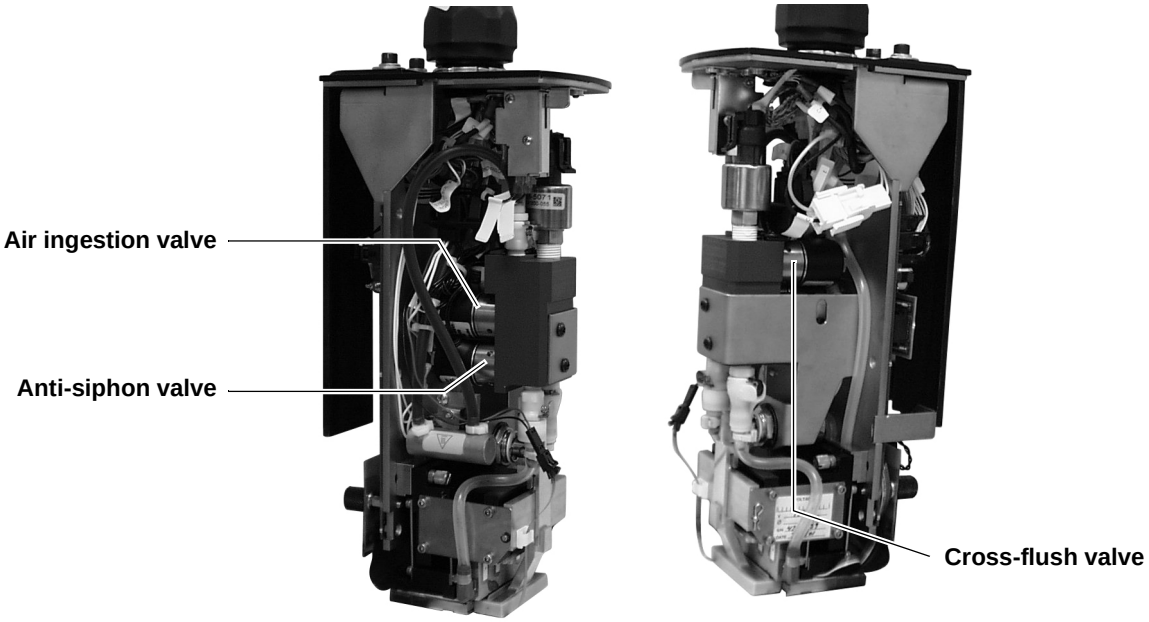
Figure 5.197 Solenoid valve (0178587)

Use the following procedure to replace a solenoid valve:

1. Locate the valve mounted on the printhead manifold (see Figure 5.198).

   From top to bottom, the valves are positioned: cross-flush, anti-siphon, and air ingestion. Remove the inlet for the ink condensation heater from the top of the printhead manifold.

Figure 5.198 Solenoid valve locations, 5122 printhead



2. Remove the two screws securing the printhead manifold to the printhead frame.

3. Remove the outlet line from the rear of the manifold (at the quick-disconnect).
4. Remove 2-wire cable to the cross-flush valve from the printhead components connector.

   Use a small, flat-blade screwdriver to spread the connector and pull the 2-wire shell out of the connector. Put the 2-wire connector for the replacement back into the same position

5. Unscrew the valve from the manifold using a 7/64-inch Allen wrench.
6. Install the replacement valve by reversing the removal procedure.

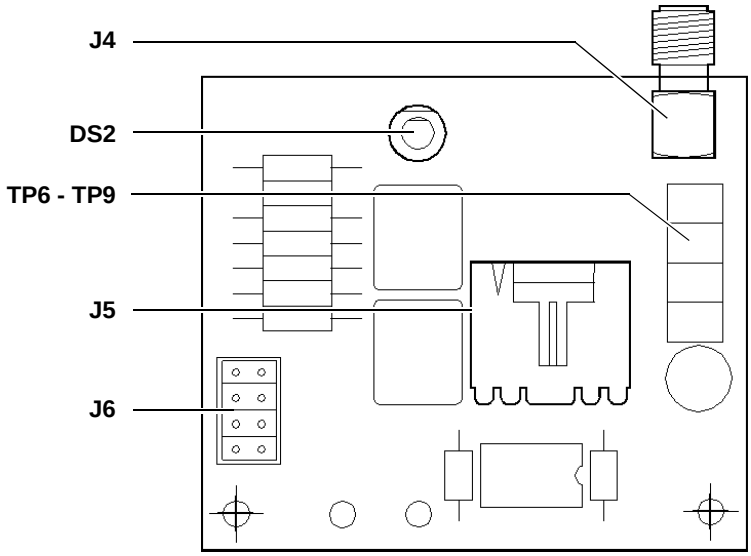
Tab Buffer Board

5120 Only

The tab buffer board (0178591) is a component of the 1", 120-dpi printhead (see Figure 5.199). The tab buffer board does not require configuration. The board layout is provided for general reference (see Figure 5.200).

Figure 5.199 Tab buffer board (0178591), 5120 printhead

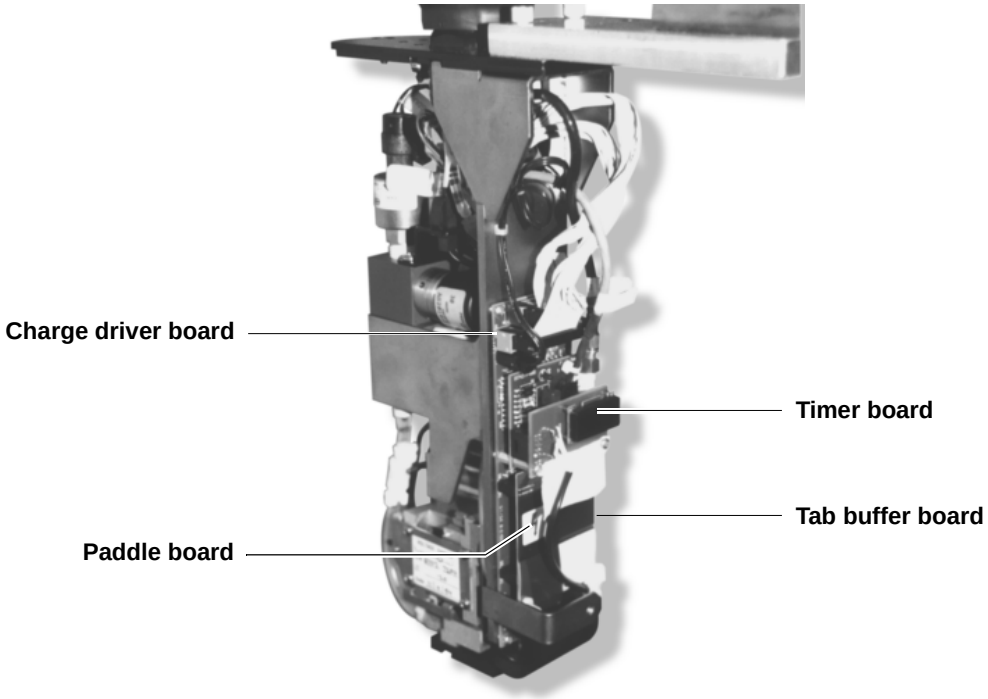
Figure 5.200 Tab buffer board layout



Use the following procedure to replace the tab buffer board:

1. Locate the tab buffer board mounted on the charge driver board in the 5120 printhead (see Figure 5.201).

Figure 5.201 Tab buffer board location, 5120 printhead



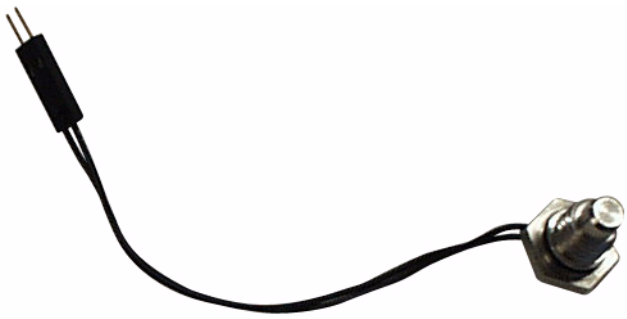
2. Remove the two screws securing the timer board to the tab buffer board.
3. Disconnect the cable from the tab buffer board.
4. Remove the two plastic standoffs securing the tab buffer board to the charge driver board.
5. Install the replacement tab buffer board by reversing the removal procedure.

Thermistor

5240 and 5122 Only

Two thermistors (0178596) are installed in the 5240 and 5122 printers (see Figure 5.202), one in the printhead manifold, and the other in the fluid supply assembly.

Figure 5.202 Thermistor (0178596)

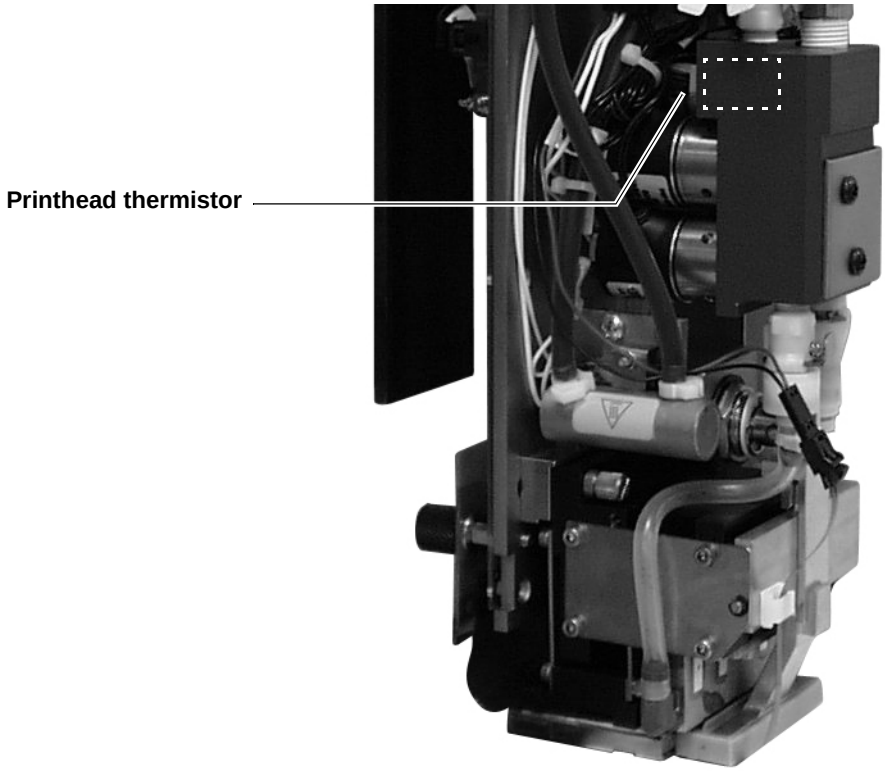


Use the following procedure to the replace either thermistor:

1. Locate the thermistor.

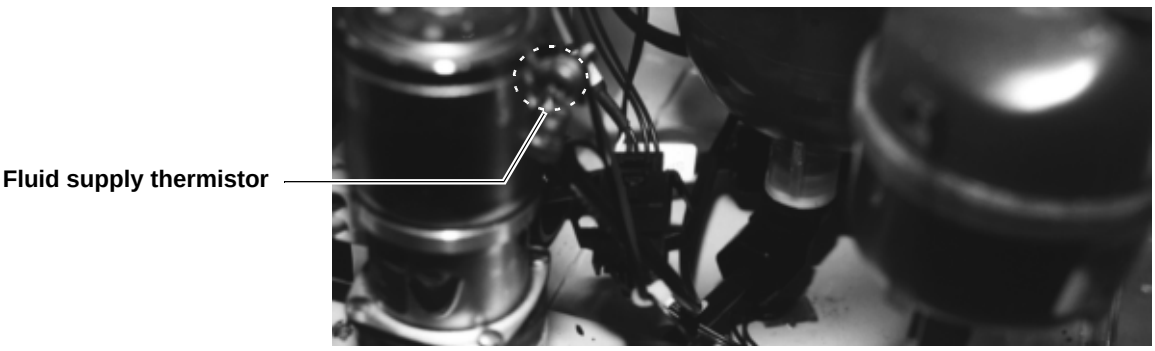
   The printhead thermistor is mounted in the back of the printhead manifold (see Figure 5.203).

Figure 5.203 Thermistor location, 5122 printhead



   The fluid supply thermistor is behind the ink pump mounted in the top of the fluid manifold (see Figure 5.204).

Figure 5.204 Thermistor location, 5240 fluid supply



2. For the fluid supply thermistor, disconnect the thermistor electrical connector from the fluid supply assembly connector housing.
3. Unscrew the ink thermistor from the ink heater; remove the ink thermistor and electrical connector.
4. Install the replacement thermistor by reversing the removal procedure.

Printing System Components

Printing system components are divided into the following categories:

- Controllers
- Cue components
- Optional components
- PC components
- Power strip
- Printhead mount components
- Printing system cables
- Tach components.

Within each section, FRUs are described in alphabetical order. Table 5.34 lists all printing system FRUs.

Table 5.34 Printing system FRUs, 5000-series printers and controllers

Product	FRU Number	Description	See Heading:
Jetscape Controller	0104004-030	MONITOR-14" COLOR 1,024x768 NI	"Monitors"
Dual Controller	0104004-036	MONITOR-15" COLOR 1,024x768 NI	
Dual Controller	0104004-037	MONITOR, 15" COLOR 1024X768	
All	0118076	CABLE ASSY I/O-GPI EXT	"I/O to GPI Extension Cable"
	0118077	CABLE ASSY SORT CODE EXT	"Sort Code Extension Cable"
	0174104	FIBER OPTIC ASSY - PACKAGED	"Fiberoptic Assembly"
	0175183	SCSI INTERFACE KIT	"SCSI Interface Kit"
	0175780	CUE ASSY (6 FT) W/PKG	"Cue Assembly, 6 ft."
	0176040	ISA TO SCSI ADAPT BD PKGD	"SCSI Adapter Board"
	0178546	CABLE, 25DM/25DF 10 FT	"Multiple Printer Interface Cables"
	0178547	CABLE, 9DM/9DF 10 FT	
	0178550	CABLE, PARALLEL 6 FOOT	"Parallel Cable"
Jetscape Controller	0178551	CABLE-SCSI TAPE DRIVE (OLD) 50P CENTRONICS	"Tape Drive Cables"
All	0178552	CABLE, SERIAL	"Serial Cable"
	0178580	PCB, COM3/LPT2 OR COMP4/LPT3	"Auxiliary Communications Board"
	0178602	CABLE ASSY-SIGS SORT CODE ADPT	"SIGS Sort Code Adapter Cable"
	0178603	CABLE ASSY-SORT CODE	"Sort Code Cable"
	0178740	CABLE-S100/S200:5120/5240 TACH/CUE, 10 FT.	"Controller Cables"
	0178778	DISK-CD-ROM DRIVER	"Software"
	0178833	CUE ASSY - PKGD	"Cue Components"
	0178938	CABLE ASSY -RELAY (FRU)	"Relay Cable Kit"
	0179331	KEYBOARD,PC/AT 104 WIN W/SKIN	"Keyboard and Mouse"
	0179925	POWER STRIP	"Power Strip"
	0180237	SFTW V1.03 CD KANJI PC PKGD	"Software"
	0181011	CD-ADOBE TYPE FONTS - FRU	
	0181693	CABLE OYSTER TERMINAL	"Remote Control Panel Cable"
	0181879	KNOB-KNRLD 5/16-18 PHEN BLK PKGD	"Printhead Mount Components"

Table 5.34 Printing system FRUs, 5000-series printers and controllers (Continued)

Product	FRU Number	Description	See Heading:
All	0181880	CUE MOUNT ASSEMBLY PKGD	“Cue Components”
	0181881	KNOB-KNRLD.375D SHFT PHEN BLK PKGD	“Printhead Mount Components”
	0182732	T/C CABLE PACKAGED FRU	“Tach and Cue Cables”
	0183205	CABLE-5120/5240 TACH/CUE EXT. 20 FT, PKGD	
	0183434	CABLE-SCSI TAPE DRIVE (NEW) HI DENSITY	“Tape Drive Cables”
Dual Controller	0184930	MOUSE-PS2/SERIAL COMBO	“Keyboard and Mouse”
All	0185429	PIVOT BRACKET ASSY (FRU)	“Tach Components”
	0185430	CAM FOLLOWER (FRU)	
	0186001	CABLE-S220:5120/5240 TACH/CUE, 30 FT, PKGD	“Controller Cables”
	0186765	CABLE ASSEMBLY-COAXIAL BNC M/BNC 6 FT (FRU)	“Coaxial Cables”
	0186766	CABLE ASSEMBLY-COAXIAL BNC M/BNC 30 FT (FRU)	
	0186767	CONNECTOR-COAXIAL BNC "T" ADAPTER (FRU)	“Coaxial Connector and Terminator”
	0186768	CONNECTOR-COAXIAL 60 OHM TERMINATOR (FRU)	
	0187414	5120, 522, 5240 CUE MOUNTING KIT	“Cue Components”
	0188301	CUE MOUNT ASSEMBLY PKGD	
	P0178569	MULITPLE PRINTER INTERFACE	“Multiple Printer Interface”
	P0178585	TAPE DRIVE, ODI 6250 SCSI	“Tape Drive”
MailScape Controller	P0185071	MAILSCAPE COMPUTER (INTEL) FRU	“Controllers”
Jetscape Controller	P0186889	PC-JETSCAPE	
Jetscape Controller	X0180032	CONTROLLER	

Controllers

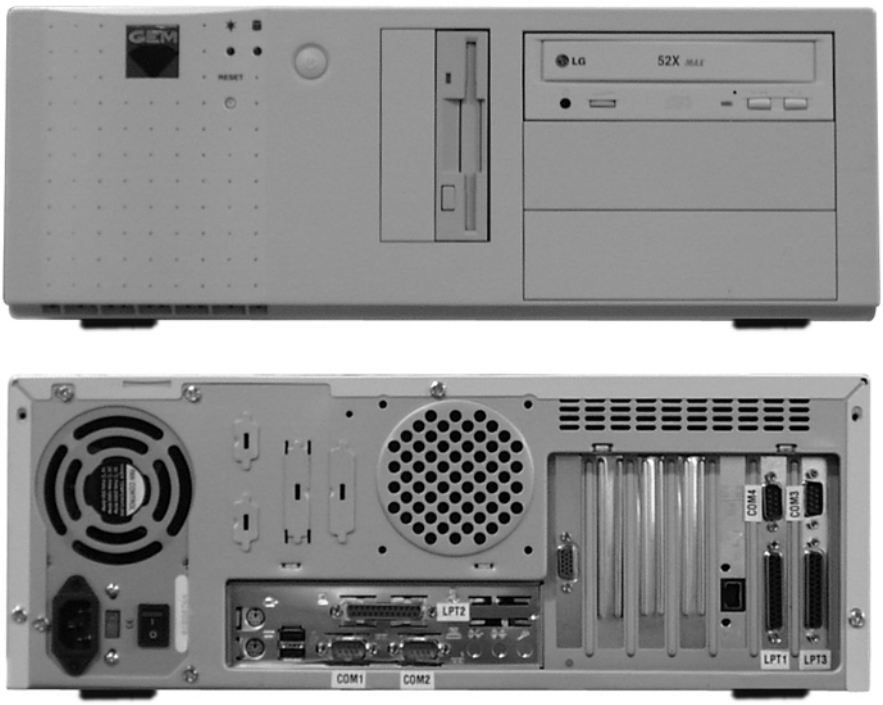
Six controller FRUs are available to support 5000 series printing systems (see Table 5.35).

Table 5.35 Controller FRUs, printing systems

Printing System	FRU Number	Description	Computer
MailScape	P0188979	PC (MAILSCAPE/ITOX) FRU	Intel Celeron 850MHZ (0104014-041)
Dual Controller	P0188981	PC (DUAL CONTROLLER/ITOX) FRU	
	X0188267	PC-DUAL CONTROLLER (FRU)	Intel Celeron 400MHz (0104009-667)
Jetscape Controller	X0186889	PC-JETSCAPE	Intel Celeron 433MHZ (0104014-038)
Dual Controller	X0180032	CONTROLLER	Intel Pentium 8MB (0104014-031)
MailScape Controller	X0185071	COMPUTER-MAILSCAPE (INTEL) FRU	Intel Celeron 400MHz (0104009-667)

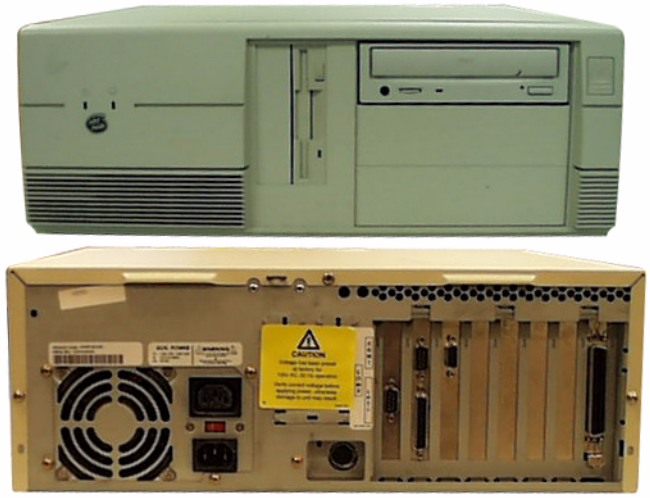
The current Dual Controller PC is available configured as a FRU for either a Jetscape or a MailScape printing system (see Figure 5.205).

Figure 5.205 Dual controller FRU (P0188981 and P0188979)



In addition to the primary Jetscape controller FRU (see Figure 5.206), Dual Controller FRUs can also be used for printing systems running only Jetscape software. The current Jetscape controller FRU replaces original 486DX and Pentium PCs shipped as Jetscape controllers. The computer is installed on top of the system cabinet (see the *Installation Guide* for detailed instructions).

Figure 5.206 Jetscape controller PC (P0186889)



In addition to the primary MailScape controller FRU (see Figure 5.207), Dual Controller FRUs can also be used for printing systems running only MailScape software.

Figure 5.207 MailScape controller PC (P0185071)

Apply the following guidelines to controller PC replacement:

- Check for optional boards (SCSI adapter or auxiliary communications); if any are installed, move them to the new PC.
- Move cables from the failed PC to the replacement PC one at a time.
- Cable and configure the new PC exactly like the failed PC.

Cue Components

Three standard cue sensor assemblies, and the fiber-optic cable for the sensor eye are printing system FRUs (see Table 5.36).

Table 5.36 Cue sensor assembly FRUs, printing system

Printing System	FRU Number	Description
All	0174104	FIBER OPTIC ASSY - PACKAGED
	0175780	CUE ASSY (6 FT) W/PKG
	0178833	CUE ASSY - PKGD
	0188301	CUE MOUNT ASSEMBLY PKGD

A cue sensor is required for all printers and printing systems, but the exact cue sensor configuration is determined at installation. The following standard kits are available:

- Cue assembly (6-ft.) - 0175780
- Cue sensor kit, Keyence - 0178983.

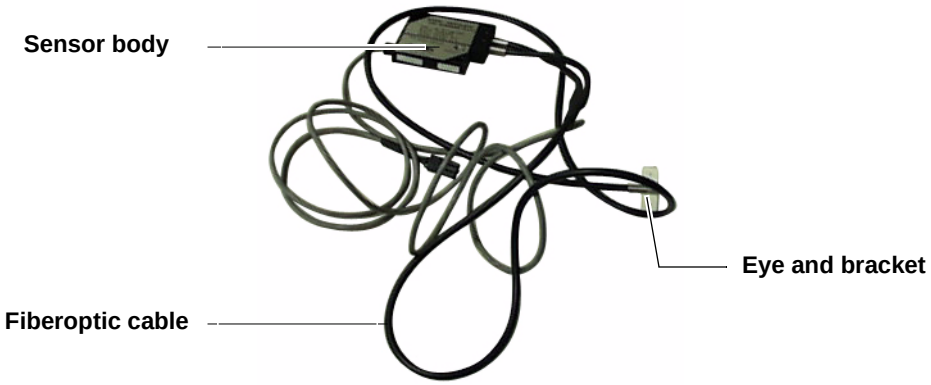
Refer to the instructions shipped with each kit for detailed information about cue sensor installation.

Cue Assembly, 6 ft.

The cue assembly, 6-ft. (0175780) s available as a printing system FRU to replace a failed or damaged assembly (see Figure 5.208).

The cue assembly includes the Keyence cue sensor body, sensor (output) cable, fiber-optic (input) cable, and sensor eye with mounting bracket. Connect the output cable to the tach and cue extension cable. The sensor body and eye mount on the transport. For detailed instructions on mounting the cue assembly, refer to the instructions shipped with the FRU.

Figure 5.208 Cue assembly, 6 ft. (0175780)



Cue Mount Assembly

The cue mount assembly (0188301) is used to mount a cue assembly (see Figure 5.209). The similar cue mount assembly for the 5120 (0181880) can also be used. Any standard cue assembly (such as 0178833) can be installed on the mount. Refer to the instructions shipped in the cue sensor kit for detailed installation instructions.

Figure 5.209 Cue mount assembly (0188301)

Fiberoptic Assembly

The fiberoptic assembly (0174104) is a component of the cue assembly (see Figure 5.210).

Figure 5.210 Fiberoptic assembly, cue sensor (0174104)

Optional Components

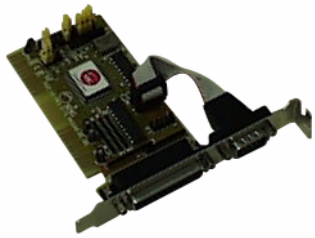
The following FRUs are available to replace components of printing system options:

- Auxiliary communications board
- Coaxial connector and terminator
- Coaxial cables
- I/O to GPI extension cable
- Multiple printer interface
- Multiple printer interface cables
- SCSI adapter board
- SCSI interface kit
- Tape drive
- Tape drive cables.

Auxiliary Communications Board

The auxiliary communications board (0178580) installs in the controller PC as part of the multi-printer interface option (see Figure 5.211). This board provides COM3/LPT2 and COM4/LPT3 ports. See the multi-printer interface option *Installation Instructions* (0114054) for detailed installation procedures.

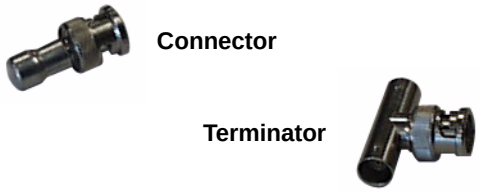
Figure 5.211 Auxiliary communications board (0178850)



Coaxial Connector and Terminator

The BNC "T" adapter (0186767) is plugged into the BNC connector on the controller network board, and the printer requires a 60-Ohm terminator (0186768). In a multiple printer installation, the terminator is installed on the last networked printer in the series (see Figure 5.212).

Figure 5.212 Coaxial connector (0186767) and terminator (0186768)



Coaxial Cables

Two coaxial cables (0186765 and 0186766) are FRUs; these (functionally identical) cables connect the printer Ethernet transceiver t the controller network board.

Figure 5.213 Coaxial cable, 6-ft. (0186765)

I/O to GPI Extension Cable

The I/O to GPI extension cable (0118076) is a component of both optional K4K kits (0177205 and 0188161); it connects the printer to a compatible data source, such as a binding line controller.

Note: This cable is identical to cable 0186773.

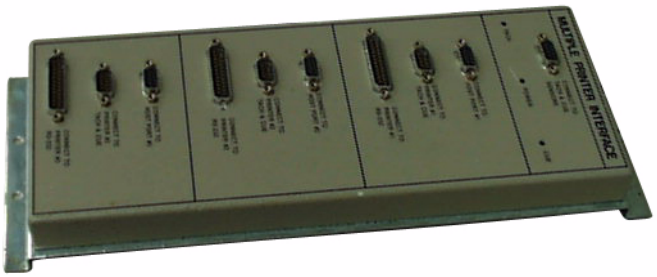
Connect the male, 50-pin connector to the optional K4K connector on the printer back panel, and connect the female, 50-pin connector to the controller.

Figure 5.214 I/O to GPI extension cable (0118076)

Multiple Printer Interface

The multiple printer interface (P0178569) is available as a FRU. This optional component mounts on the back of the printing system enclosure. The complete multiple printer interface option includes the interface (connector panel), cables, and software. This option can be factory installed or installed in the field using an upgrade kit. To replace the multiple printer interface, reverse the installation procedure provided in the *Installation Instructions* (0114054). The instructions are included in both the option and upgrade kits.

Figure 5.215 Multiple printer interface (P0178569)



Multiple Printer Interface Cables

The multi-printer interface cables (0178546 and 0178547) connect to the optional multiple printer interface (P0178569) that is installed on the back of the printing system enclosure. The cables are available as FRUs to replace failed components of the optional kit. The complete multi-interface option includes cables and software provided in a kit. Refer to the multi-printer interface *Installation Instructions* (0114054) shipped with the option kit for a detailed installation procedure.

Figure 5.216 9-pin multiple printer interface cable (0178547)

Figure 5.217 25-pin multiple printer interface cable (0178546)

Remote Control Panel Cable

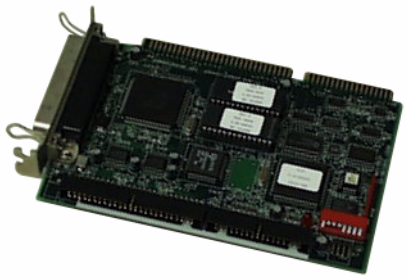
The remote control panel cable (0181693) connects the handheld remote to the printer. This cable is available as a FRU to replace a failed cable (see Figure 5.218). This cable is labeled with manufacturing part number 0180082.

Figure 5.218 Remote control panel cable (0181693)

SCSI Adapter Board

The SCSI adapter board (0176040) installs in the controller PC when the tape drive option is installed (see Figure 5.219). Operation with this board requires other components included in the SCSI interface kit (0175183). Install the SCSI adapter board in the right-most slot of the controller PC (or the closest open slot). Refer to the vendor documentation shipped with the controller PC for detailed board installation instructions.

Figure 5.219 SCSI adapter board (0176040)



SCSI Interface Kit

The SCSI interface kit (0175183) is available as a FRU that contains the following components:

- 0104009-657 - SCSI adapter board (0176040)
- 0100378-431 - Standard SCSI Cable (0178551)
- 0100378-441 - Hi-density SCSI cable (0183434).

Each kit component is also a separate FRU. This kit is available as a factory-installed option, or as a field upgrade.

Tape Drive

The optional tape drive (P0178585) is available as a FRU to replace a failed drive (see Figure 5.220). The current tape drive is an Overland Data Industries, Inc., 6240 bits-per-second, SCSI magnetic tape unit. For detailed installation, operation, and maintenance procedures, refer to the vendor documentation shipped with the tape drive.

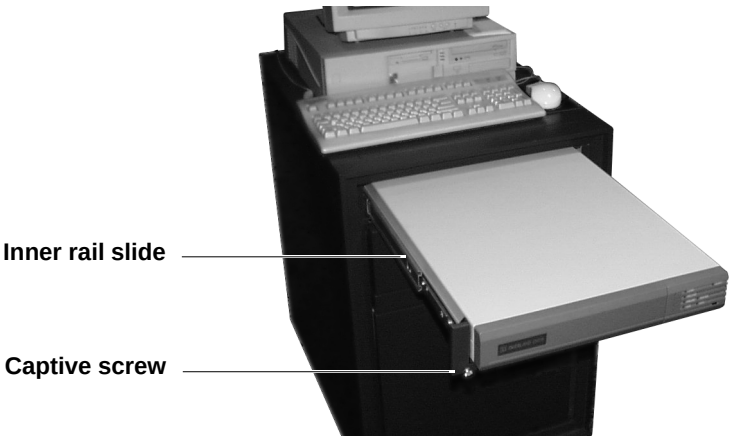
Figure 5.220 Tape drive (P0178585)

Use the following procedure to replace the tape drive:

1. Locate the drive installed in the top position of the printing system enclosure (see Figure 5.221).
2. Remove any cable ties securing the tape drive power cord to other cables.
3. Disconnect the tape drive power cord from the power strip located inside the system cabinet.
4. Disconnect the SCSI cable from the connector on the back of the tape drive.
5. Loosen the captive screw securing the drive fairing to the cabinet (see Figure 5.221).

   Older cabinets had four screws securing the drive fairing to the cabinet.

Figure 5.221 Tape drive, printing system enclosure



6. Pull the drive out until the slide locks are accessible.
7. Press both locks and remove the drive from the cabinet slides.
8. Remove the inner rail slides from the failed drive and mount them on the replacement drive.
9. Slide the drive into the cabinet rails and replace the fairing screws.
10. Slide the tape drive out of the slot in the system cabinet until the system rails are completely extended; press the safety tabs on the sides of the tape drive to release the tape drive from the system cabinet rails.
11. Install the replacement drive by reversing the removal procedure.

Tape Drive Cables

Standard and hi-density SCSI cables for the optional tape drive are available as FRUs.

The hi-density SCSI cable (0183434) has a regular (large) SCSI connector on the printer end and the Micro-D SCSI connector on the tape drive end (see Figure 5.222). Connect the regular end of the cable to the SCSI connector on SCSI adapter board in the controller PC and the hi-density connector to the tape drive. This cable is labeled with vendor part number 0100378-441.

Figure 5.222 Hi-density SCSI tape drive cable (0183434)

The regular SCSI cable (0178551) has two regular SCSI connectors (see Figure 5.223). Connect one, 50-pin plug to the SCSI connector on SCSI adapter board in the controller PC and the other to the tape drive.

Figure 5.223 SCSI cable (0178551)

PC Components

The following FRUs are PC components compatible with all controllers:

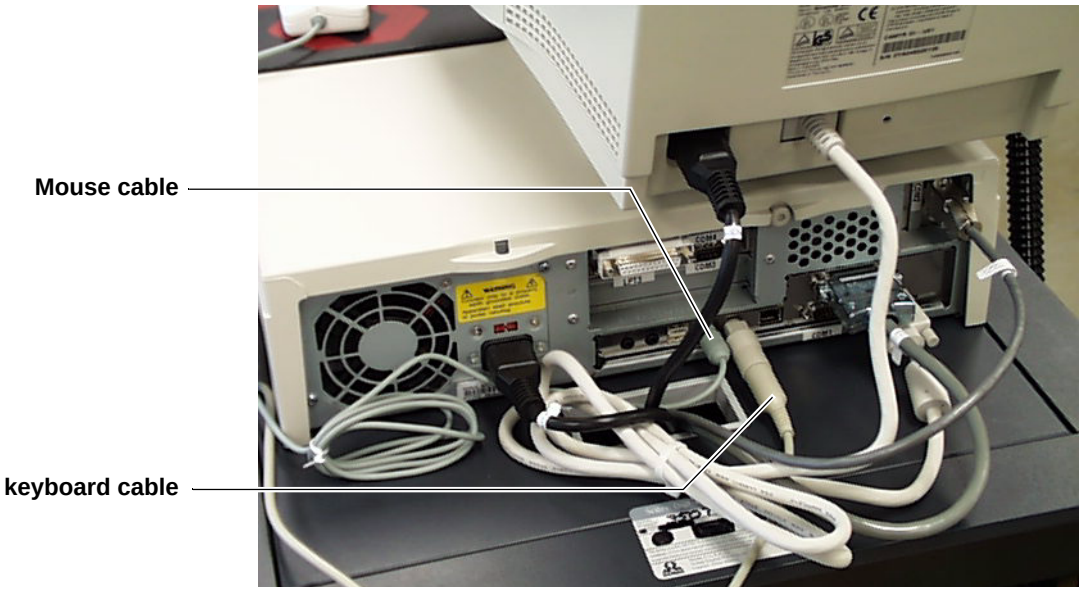
- Keyboard and mouse
- Monitors
- Software.

Keyboard and Mouse

The keyboard (0179331) and PS2/Serial mouse (0184930) are printing system FRUs (see Figure 5.224). To replace the keyboard or mouse, disconnect the failed component from the controller PC and connect the replacement component (see Figure 5.225).

Figure 5.224 Keyboard (0179331) and mouse (0184930)

Figure 5.225 Mouse and keyboard connections, dual controller PC



Monitors

A monitor is a component of all 5000 series printing systems. The printing system monitor is either of three FRUs (see Table 5.37 and Figure 5.226).

Table 5.37 Monitor FRUs

Product	FRU Number	Description
Jetscape Controller	0104004-030	MONITOR-14" COLOR 1024X768 NI
MailScape Controller		
Dual Controller	0104004-036	MONITOR-15" COLOR 1024X768 NI
	0104004-037	MONITOR, 15" COLOR 1024X768

Figure 5.226 Monitor, 14" viewable screen (0104004-030)

Use the following procedure to replace the monitor:

1. Locate the monitor on top of the printing system cabinet (see Figure 5.227).

Figure 5.227 Monitor location, dual controller printing system

2. Disconnect the power and interface cables from the monitor.

   Remove the cables and retain them for use as spares, or connect them to the new monitor. Two new cables are shipped with the monitor FRU. If used, the new power cord must be routed down into the cabinet and plugged into one of the five female receptacles in the back of the power strip.

3. Remove the monitor.
4. Install the replacement monitor by reversing the removal steps.

Software

Three FRUs are printer software (see Table 5.38). For detailed software installation procedures, see the Controller Software *Installation Guide* (0114083).

Table 5.38 Software FRUs, controller PCs

Printer	FRU Number	Description
All controllers	0178778	DISK-CD-ROM DRIVER
Jetscape controller	0180237	SFTW V1.03 CD KANJI PC PKGD
All controllers	0181011	CD-ADOBE TYPE FONTS - FRU

Power Strip

The power distribution panel, or power strip (0179925) is a component of all 5000 series printing system enclosures (see Figure 5.228).

Figure 5.228 Power strip (0179925)

Use the following procedure to replace the power strip:

1. Locate the power strip mounted in the top rear of the cabinet (see Figure 5.229).
2. Unplug the external power cord. Cut the cable tie strain relief.
3. Unplug all the internal power cords.
4. Disconnect the ground wire.
5. Remove the four Phillips screws and star washers securing the power strip to the cabinet.
6. Install the replacement power strip by reversing the removal procedure. Replace the cut cable tie.

Figure 5.229 Power strip location, printing system enclosure

Printhead Mount Components

Two knurled knobs (0181879 and 0181881) which are components of the label base printhead mount assembly are FRUs (see Figure 5.230). The two knobs are identical, but one is used for vertical adjustment of the printhead, and the other is used for the horizontal adjustment. Replace a knob that is lost or damaged.

Figure 5.230 Knurled knob, printhead mount (0181879 and 0181881)

Printing System Cables

The following cables are used in the standard 5000 series printers:

- Controller cables
- Parallel cable
- Relay cable
- Serial cable
- SIGS sort code adapter cable
- Sort code cable
- Sort code extension cable
- Tach and cue cables.

Controller Cables

Two tach and cue cables that connect 5000 series printers to the system controllers (S100, S200, and S220) are FRUs (see Table 5.39).

Table 5.39 Controller cable FRUs

Printer	FRU Number	Description
All	0178740	CABLE-S100/S200:5120/5240 TACH/CUE, 10 FT.
	0186001	CABLE-S220:5120/5240 TACH/CUE, 30 FT, PKGD

The S100 and S200 tach and cue cable connects a 5000 series printer to a printing system controller tach and cue board. The 15-pin plug goes to the TACH / CUE connector on the printer back panel, and the two 9-pin plugs go to the tach and cue board connectors on the system controller tach and cue board (J4 and J5).

Figure 5.231 S100 and S200 tach and cue cable (0178740)

The controller tach and cue extension cable (0186001) connects the printer to a S220 controller (see Figure 5.232). This cable is labeled with manufacturing part number 0185474. The 15-pin plug goes to an output tach and cue connectors (OT/C1&2 through OT/C7&8) on the system controller PC tach and cue array. Each 9-pin plug goes to a TACH / CUE connector on a printer back panel.

Figure 5.232 Controller tach and cue extension cable (0186001)

Parallel Cable

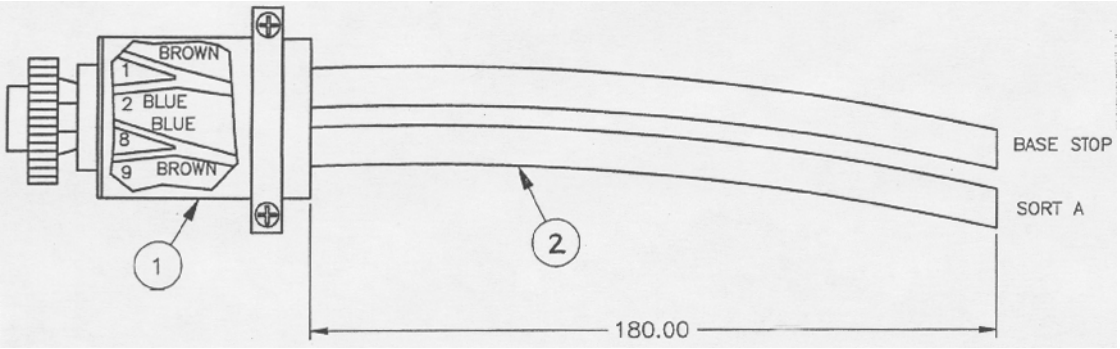
The 6-ft., parallel cable (0178550) is a printing system FRU. Connect one shielded, 36-pin plug to the CENTRONICS connector on the printer back panel and the other to the data source.

Figure 5.233 Parallel cable, 6-ft. (0178550)

Relay Cable Kit

The relay cable kit (0178938) provides a 30-ft cable (0178910), contacts, and a connector to connect the SORT / STOP connector on the printer to an external device or I/O box. The 9-pin plug matches the SORT / STOP connector on the printer back panel; the other end of the cable is four discrete wires (see Figure 5.234). The kit includes instructions 0178939.

Figure 5.234 Connections, relay cable (0178910)



Serial Cable

The serial cable (0178552) is a printing system FRU. Connect the 25-pin plug to the RS 232 connector on the printer back panel and the 9-pin plug to the data source.

Figure 5.235 Serial cable (0178552)

SIGS Sort Code Adapter Cable

The SIGS sort code adapter cable (0178602) is available as a printing system FRU (see Figure 5.236). This 24-ft. cable connects the CONTROL I/O port on the printer to the SIGS cable used by Scitex binding line controllers. The cable has manufacturing part number 0139375.

Figure 5.236 SIGS sort code adapter cable (0178602)

Sort Code Cable

The sort code cable (0178603) is available as a printing system FRU (see Figure 5.237). This cable adapts the CONTROL I/O connector on the printer to a standard 24-pin connector. One end is a 24-pin male connector and the other end is a 24-pin female connector. The cable has manufacturing part number 0178011.

Figure 5.237 Sort code cable (0178603)

Sort Code Extension Cable

The sort code extension cable (0118077) is part of the optional stacker controller imager interface kit (0175002); it connects the printer to a compatible stacker or to a 4100 or 4200 binding line controller (see Figure 5.238).

Note: This cable is identical to cable 0186773.

Connect the female, 25-pin connector to the SORT / STOP connector on the printer back panel, and connect the male, 25-pin connector to the stacker or controller.

Figure 5.238 Sort code extension cable (0118077)

Tach and Cue Cables

Two standard tach and cue cables connect 5000 series printers to the tach encoder on the printing system transport (see Table 5.40).

Table 5.40 Tach and cue cable FRUs

Printer	FRU Number	Description
All	0182732	CABLE - T/C PKGD
	0183205	CABLE-5120/5240 TACH/CUE EXT. 20FT.-PKGD

The standard tach and cue cable (0183205) connects the printer to the input tach and cue cable.

Figure 5.239 Tach and cue cable (0182732)

The 20-ft. tach and cue cable (0183205) provides a longer alternative cable for standard applications. This cable is labeled with manufacturing part number 0180906.

Figure 5.240 Tach and cue extension cable, 20-ft. (0183205)

Tach Components

Two components of the friction roller tach encoder assembly used for label base applications are FRUs (see Table 5.41).

Table 5.41 Tach encoder assembly FRUs, printing system

Printing System	FRU Number	Description
All	0185429	PIVOT BRACKET ASSY (FRU)
	0185430	CAM FOLLOWER (FRU)

A tach encoder is required for all printers and printing systems, but the exact tach configuration is determined at installation. The following standard kits are available:

- Tach kit, belt-driven transport - 0177184
- Tach kit, Univalves Magnacraft - 0174228
- Tach divider enclosure assembly - 0173891.

Refer to the instructions shipped with each kit for detailed information about tach encoder installation.

Cam Follower

The cam follower (0185430) is a component of the tach encoder assembly (see Figure 5.241). See the tach kit instructions for the replacement procedure.

Figure 5.241 Cam follower (0185430), tach encoder assembly

Pivot Bracket

The pivot bracket (0185429) is a component of the tach encoder assembly (see Figure 5.242). See the tach kit instructions for the replacement procedure.

Figure 5.242 Pivot bracket (0185429), tach encoder assembly

Appendix A. Field Modifications

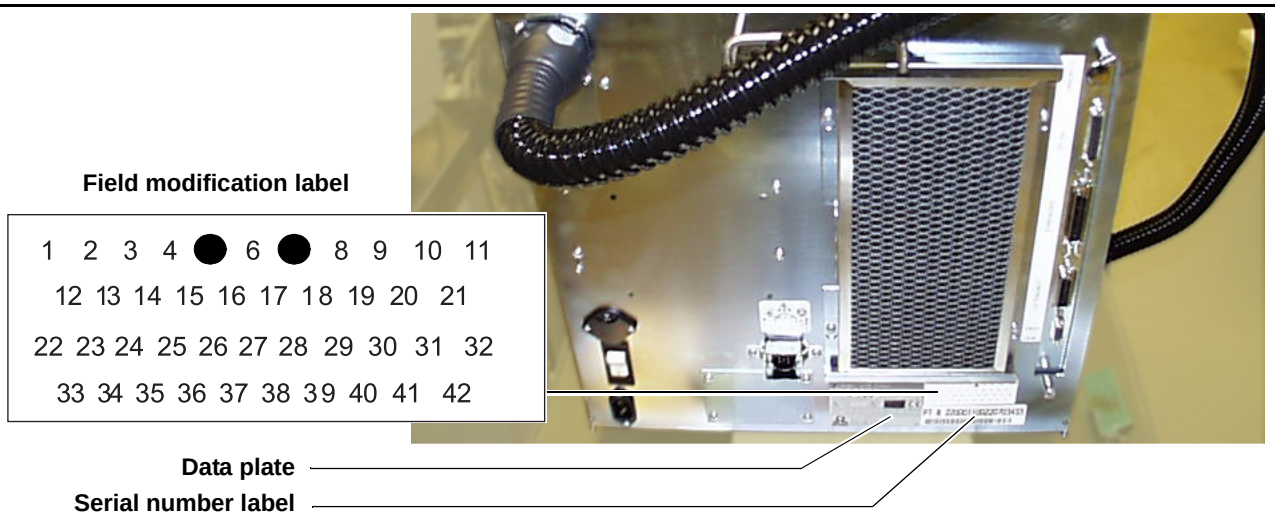
This appendix describes the field modifications of 5000 series printers.

Mod Label Information

Installed field modifications (or “mods”) are identified by blacked-out numbers on the field modification label affixed to the rear panel of the printer (see Figure A.1). Current printers have the following modifications factory installed:

- 5120 - 1 through 5 and 7
- 5240 - 1 through 4, 6 and 7
- 5122 - None.

Figure A.1 Field modification label, 5120 printer



Mod Descriptions

Table A.1 describes each modification.

Table A.1 Field modifications, Dijit 5000 Series Printer

Mod. #	Effective Serial Number[1]	Date	Description
1	0001	11/1995	New vacuum and positive air pumps
2	0640	01/1995	Angled printing changes (5240 only)
3	0956	05/1997	DS main, IJC and Host controller software changes (Block 2)
4	3000	03/1998	Additional Block 2 changes to 5240 and corresponding hardware changes in 5124
5	1448	04/1998	Printhead reliability improvements: IJC firmware V1.61 (U89) and V0.61 (U71) for 5120 and V3.46 (U89) and V0.61 (U71) for 5120
6	3230	07/1999	New ink condensation heater; IJC software V4.02 for fluid system
7	N/A[2]	09/1999	Host controller Y2K readiness software change

1. The 4-digit serial number is on the data plate; it is part of the “full” serial number on the serial number label. For example, printer serial number PT # 220001000220703420 would have 3420 on its data plate.
2. Required printer DS firmware V2.24 was implemented in (TES1064).

Mod Upgrade Kits

Table A.2 lists the upgrade kits for each field modification.

Table A.2 Field mod kits, 5000 series printers and controllers

Mod. #	5120	5240	Printing Systems	Notes
1	None			Implemented prior to product release; no printers in the field should require this modification
2	None	0180233	None	Angled printing upgrade; kit 0180233 is part of kit 0180907
3	0180961	0180907	0180925 (single printer) 0178792 (multi-printer)	Requires firmware upgrades: DS Main U16, U29, and U45 IJC U71 and U89 (5120 or 5240) Requires software upgrades: Print Control V3.64 Control Panel V1.09 Diagnostics V1.09 Layout 1.07
4	None[1]			Hardware modifications: Larger vacuum pump, ink condensation heater, air ingestion solenoid, catcher return tube solenoid, air ingestion filter on printhead manifold, and ventilation slots in ink compartment door. Software upgrade: IJC firmware V1.61
5	0182837			Software upgrades: 5120 IJC firmware V1.61 5240 IJC firmware V3.46 If Mod 3 has been installed, software upgrade for Mod 5 can be downloaded. Mod 4 and Mod 5 are mutually exclusive for the 5240 due to the hardware differences.
6	None	0182511	None	Hardware modification: Ink condensation heater board change Software upgrade: 5240 IJC V4.02
7	0179654		0180925 (single printer) 0178792 (multi-printer)	Software and firmware Y2K readiness upgrade

1. Mod 4 cannot be installed in the field.

Appendix B. Shutdown and Recovery

This appendix describes shutdown and recovery procedures used for a Dijit 5000 Series printer that will not operate for longer than 7 days (168 hours). Use Table B.1 to determine the correct shutdown procedure.

Table B.1 Shutdown procedure types, idle times

Idle Period	Recommended Procedure
Up to 7 days	Normal shutdown (see the *Operator's Guide)*
7 to 30 days (168 to 720 hours)	Extended shutdown
Over 30 days (> 720 hours)	Long-term shutdown

Shutdown Procedures

Use the following procedures to shutdown a printer that will remain idle for the specified periods. If the length of idle period is unknown, use the long term shutdown procedure.

Extended Shutdown

Use the following extended shutdown procedure for a printer that will be idle for at least 7 days (168 hours), but not more than 30 days (720 hours).

1. Enter Diagnostics.
2. Perform the following circulate procedure:
   a. Select **Fluid System** → **Select state table type** → **Circulate**.
   b. Select **Printhead to state #6**.
   c. Allow the printhead to reach state #6. Remain in state #6 for an additional 30 seconds to allow ink to circulate.
   d. Select **Printhead Down**.
3. Exit Diagnostics.
4. Power the printer off by pressing [PRINTER ON] on the operator panel (the indicator goes out).

Long-Term Shutdown

Use the following procedure to shut down a printer that will be idle for at least 30 days (720 hours) or longer.

1. If the fluid system is activated, press [STANDBY] on the operator panel to deactivate it.

Note: If the printer is off, power the printer on with the fluid system by-passed.

2. Remove the printhead front and rear covers.
3. Power on the system controller and enter Diagnostics.
4. Select the appropriate procedure for the printer being shut down.

5120 Printhead Empty

5. Select **Fluid System** → **Select state table type** → **Purge**.
6. Select **Printhead to state #3**.
7. Disconnect the printhead filter from its clip.
8. Disconnect the catcher quick-disconnect.

Note: To open quick-disconnect fittings, press the release button and gently separate two connectors.

9. Disconnect the twist connector on the inlet tube.
10. Wait a few minutes to allow the printhead ink to drain into the ink supply.

5120 Printhead Isolation

11. Isolate the printhead using the following steps:
    a. Reconnect the catcher quick-disconnect.
    b. Disconnect the twist connector on the outlet tube.
    c. Connect the manifold sides of the ink inlet tube and the ink outlet tube together.
    d. Connect the printhead sides of the ink inlet tube and ink outlet tube together.
12. Continue with Step 15.

5240 and 5122 Printhead Empty

a. Select **Fluid System** → **Select state table type** → **Purge**.
b. Select **Printhead to state #3**.
c. Disconnect the catcher quick-disconnect (5240), or silastic fluid line (5122).
d. Disconnect the quick-disconnect on the inlet tube.
e. Wait a few minutes to allow the printhead ink to drain into the ink supply.
f. Reconnect the catcher quick-disconnect (5240), or silastic fluid line (5122).

5240 and 5122 Printhead Isolation

13. Isolate the printhead using the following steps:
    a. Disconnect the quick-disconnect on the outlet tube.
    b. Connect the printhead sides of the ink inlet and ink outlet tubes together.
    c. Install the printhead by-pass tube to the manifold quick-disconnect.
14. Continue with Step 15.

All Printers

15. Power the printer down by pressing PRINTER ON to the Off position. (Light is off.)
16. Exit Diagnostics.
17. Power off the system controller (if applicable).
18. Replace the printhead front and rear covers.

Recovery Procedures

The following procedures apply to all 5000 Series printers.

Recovery from Extended Shutdown

Use the following procedure to bring up a printer after extended shutdown:

1. Check the ink and replenisher supplies. Replace any unsealed container of fluid that has sat unused for the entire period of the shutdown.
2. Press the [PRINTER ON] button on the operator panel.

   The light comes on; wait for the printer to complete its POC sequence and come to ready.

Recovery from Long-Term Shutdown

Use the following procedure to bring the fluid system up after a long-term shutdown.

1. Remove the printhead front cover.
2. Power the printer on with the fluid system by-passed.
3. Press [PRINTER ON] while holding down [OPEN EYELID] until all of the lights on the printer operator panel come on.
4. Power on the system controller (if applicable).
5. Enter Diagnostics.

6. Perform the following circulate procedure:
    a. Select **Fluid System** → **Select state table type** → **Circulate**.
    b. Select **Printhead to state #6**.
    c. Allow ink to circulate for 20 minutes.
    d. Select **Printhead down**.

5120 Printhead Connection

7. Connect the printhead using the following steps:
    a. Disconnect the printhead manifold side of the ink inlet and ink outlet tubes.
    b. Disconnect the printhead sides of the ink inlet and outlet tubes.
    c. Reconnect the twist connectors on the outlet tube.
    d. Reconnect the twist connectors on the inlet tube.
    e. Reconnect the printhead filter.
8. Continue with Step 11.

5240 and 5122 Printhead Connection

9. Connect the printhead using the following steps:
    a. Remove the printhead by-pass tube from the printhead manifold quick-disconnect.
    b. Reconnect the quick-disconnect on the outlet tube.
    c. Reconnect the quick-disconnect on the inlet tube.
10. Continue with Step 11.

All Printers

11. Circulate ink using the following steps:
    a. Select **Fluid System** → **Select state type** → **Circulate**.
    b. Select **Printhead to state #6**.
    c. Allow ink to circulate for 20 minutes.
    d. Select **Printhead down**.
12. Replace the printhead front cover.
13. Select **Fluid System** → **Select state type** → **Normal**.
14. Select **Printhead clean**.

Appendix C. Printhead Procedures

This appendix describes the following procedures:

- Printhead adjustment
- Lockout switch tool

  These procedures apply to all printheads.

- Printhead positioning

  These procedures apply to the 240-dpi 5240 printhead.

Printhead Adjustment

Use the following procedures to adjust printhead phase and voltage settings when the factory settings (on printhead label) do not produce the desired print quality.

Note: Phase and voltage should only be adjusted when a test pattern verifies that the factory-set values do not produce the desired print quality. Always determine the phase window before adjusting phase.

Phase Adjustment

Phase adjustment defines the phase “window” that produces optimum print quality. The phase window is a range of voltage values. Use test patterns to check the changes in print quality produced by phase window adjustments. Use these adjustments to calculate the phase window that produces the best print quality.

Apply the following guidelines to phase adjustment:

- A voltage setting that is out of the print window range can affect the phase window.
- A phase setting that is near the edge of the phase window range can affect the print window.
- Print speed may also affect the print window. Use 400 fpm (122 mpm) as the standard print speed for print window evaluation.

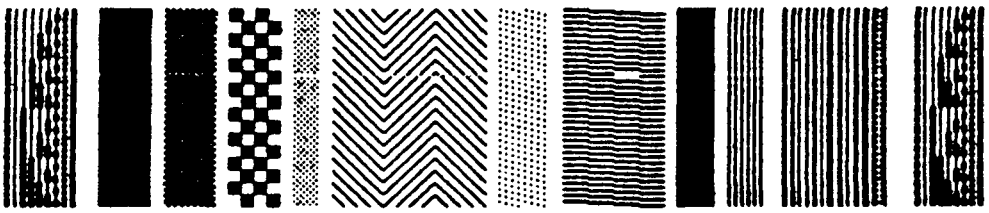
Use the following procedure to establish the phase window:

1. Enter Diagnostics.
2. Select **Data System** → **Print test pattern** → **Printhead phase** and enter 1 for the phase setting.
3. Start printing test patterns (select **Ready**).
4. Examine the test patterns for defects.

   If the test pattern is normal, go to step 6.

   If missing spots or bands of print occur (Figure C.1), go to step 5.

Figure C.1 Missing spots or bands of print



5. Raise the phase setting and check each adjustment by printing test patterns. Stop when a you produce a test pattern with voids or dark defects (see Figure C.1). Note this setting; it is the *high end* of the phase window.
6. Raise the phase setting, and print a test pattern to check the effect of the adjustment. Continue this process until you produce a test pattern with no visible defects. Note this setting; it is the *low end* of the phase window.
7. Determine the middle of the phase window by subtracting the low end value from the high end value.

   For example: 12 – 48 = -36.
8. If the result is a negative number, subtract it from 56. The resulting value is the size of the phase window.

   For the example above: 56 – 36 = 20.
9. Divide the phase window size by 2.

   For the example above: 20 ÷ 2 = 10.
10. Add this value to the low-end phase window setting.

    For the example above: 48 + 10 = 58.
11. If the resulting value exceeds 55, subtract it from the high-end setting. For the example above: 48 + 10 = 58; 12 – 10 = 2.
12. Note the resulting value; it is the mid-range phase setting.

13. Select **Fluid System** → **Setup** → **Phase parameter** and enter the mid-range value.

14. Press ENTER twice to save this setting.

Adjusting Voltage

Use the following procedure to determine the print window and the mid-range value to be used as the voltage setting. This procedure assumes that you have printed test patterns that reveal print quality problems.

1. In Diagnostics, select **Data System** → **Print test pattern** → **Printhead volts**.

2. Enter 165 for the printhead volts parameter.

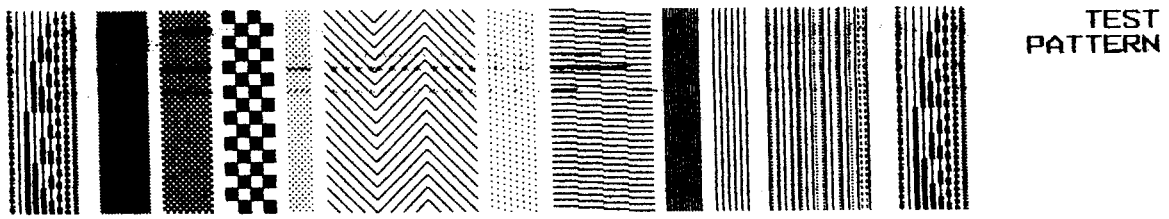
   If the printer does not operate properly at 165 volts, reduce the volts setting incrementally until you find the highest setting at which the printer operates properly.

3. Print a test pattern (select **Ready**) and examine it for defects.

4. Beginning at 165 volts (or the setting determined in step 2), lower the voltage setting by 5 and check print quality.

5. Continue lowering the voltage incrementally until you produce a test pattern with dark defects (see Figure C.2). Note this setting; it is the *low end of the print window.*

Figure C.2 Dark defect, defines low end of print window



Caution: Operating the printer at voltages below the low-end setting of the print window causes increased dark defects. As the voltage drops further, streakers appear.

6. Select **Fluid System** → **Setup** → **Volts** and enter a value 10 volts above the low-end setting.

7. Press ENTER twice to save this setting.

8. Print another test pattern to verify the phase and voltage settings.

   If print quality is unsatisfactory, repeat both procedures.

Lockout Switch Tool

Use the following procedures to install or remove the TOOL - LOCKOUT SWITCH ACTUATOR (0177233). This tool must be installed to operate a printer with the printhead covers removed.

Caution: High voltage is present in the printhead during operation.

The tool is installed in place of the rear printhead cover, and it must be removed before the printhead rear cover can be put back on.

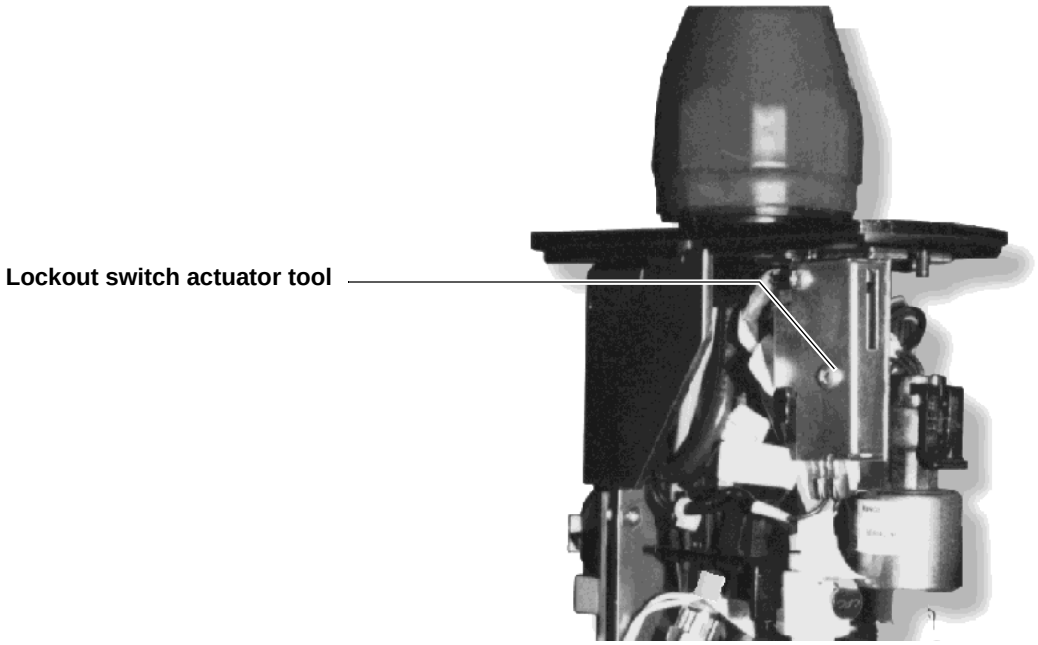
The tool is part of the DTR TEST KIT (0178399). If you need to replace the tool, contact technical support.

Tool Installation

Use the following procedure to install the tool.

1. Shut down the printer (see the *Operator's Guide*).
2. Remove the printhead covers.
3. Locate the slot in the cover interlock switch (see Figure C.3).
4. Position the lockout switch actuator tool so that it slides into the slot.
5. Secure the lockout switch actuator tool to the umbilical end of the printhead cover with one screw (see Figure C.3).

Figure C.3 Lockout switch actuator tool, installed on early 5240 printhead



Tool Removal

Use the following procedure to remove the tool.

1. Remove the screw securing the tool to the printhead cover.
2. Slide the tool out of the slot in the cover interlock switch.

Printhead Positioning

To fully utilize the higher resolution of the 240 dpi printhead, position the printhead within 0.12 inch of the substrate (measured from the printhead bottom cover to the substrate). When it is impossible to get the printhead within the recommended distance, use one of the following compensating modes:

- Odd/Even (O/E)
- Odd/Even/Slip (O/E/S).

These modes minimize drop placement error inherent in projecting smaller drops over long throw distances by using a special matrix of drops to form the image.

Odd / Even Mode

Errant drops are often caused by the non-uniform charging effects of neighboring drops, so errant drops can be significantly reduced by using adjacent drops from alternate stim cycles instead from within the same stim cycle. O/E mode uses two stim cycles for each dot row printed.

Odd / Even / Skip Mode

To further reduce the chance of errant drops, a row of catch drops can be interposed between each row of print drops. This method uses four stim cycles for each dot row printed, but produces the best results for a printhead mounted higher than the recommended distance from the substrate. This mode is also called odd/skip/even/skip mode.

Throughput Effects

Odd/Even and Odd/Even/Skip modes reduce the maximum throughout the printer can achieve as shown in Table C.1. Throughout in all modes is content dependent. Throughput is also reduced by excessive font changes, excessive numbers of characters, or extremely short images.

Table C.1 Maximum throughput in feet per minute (fpm)

Horizontal Resolution[1]	5120 / 5240 / 5122			5240		
	Standard	**O / E**	**O / E / S**	**Standard**	**O / E**	**O / E / S**
120 x 120	1000	1000	500	N/A	N/A	N/A
120 x 240	500	500	250	N/A	N/A	N/A
240 x 240	N/A	N/A	N/A	1000	1000	500
240 x 480	N/A	N/A	N/A	500	500	250

1. Resolution along the path of substrate movement. Vertical resolution is fixed at either 120 or 240 dpi.

Catch Pan Installation

If a label base is not installed, the catch pan assembly must be installed on the printhead housing before printing test patterns. The catch pan recovers printed ink drops to be sent through the catcher tube to the waste container.

Use the following procedure to install the catch pan on the printhead housing:

1. Remove the printhead covers
2. Install the catch pan on the printhead housing where the rear printhead cover is normally installed.

   Position the catch pan under the print array so that the catch pan is parallel to the print array.
3. Secure the catch pan to the printhead housing using one capscrew.

Use the following procedure to test the printer electronics:

1. Turn the printer on with the fluid system bypassed by holding down the [OPEN EYELID] button on the operator panel, while pressing the [PRINTER ON] button. Continue to press [OPEN EYELID] until all of the operator panel lights come on.
2. Turn on the controller.

Appendix D. Interfacing

This appendix describes signal timing and signal definition modifications required to enable custom controller software designed for the 5000 printer to control a 5120, 5240, or 5122 printer.

These changes are also described in Technical Hint #030697.000 available on the customer support website.

Signal Timing

The following timing changes improve maximum data transfer rate.

- Minimum strobe pulse width, data setup time, and hold time were reduced to 0.5 µs.
- The ACK pulse is asserted on the rising edge of STROBE and de-asserted on the falling edge of STROBE. ACK maximum pulse width is not specified
- To improve the circuit performance, a 4Kb FIFO was added. BUSY is asserted when this FIFO is full and remains asserted until the FIFO is only half full.

Signal Definitions

The following signal definitions are used by the 5120, 5240, and 5122:

- $\overline{\text{STROBE}}$ is active when data lines (DATA 1-8) are valid.
- DATA 1-8 carry the 8-bit print bytes that form the image. DATA 1 is the least significant bit. DATA 8 is the most significant bit.
- $\overline{\text{ACK}}$ goes active when a byte of data has been received.
- BUSY goes active after $\overline{\text{STROBE}}$ goes inactive (indicating a byte received) and the FIFO goes full (4096 bytes loaded) to signal the host that the printer is unable to receive data. BUSY goes inactive when the FIFO reaches half full (2048 bytes loaded). BUSY also goes active if the printer goes offline and remains active until the printer is put back online.
- SELECT goes active (high) when the printer is online and goes inactive (low) when the printer is offline.
- $\overline{\text{INPUT PRIME}}$ goes active to clear BUSY and empty the FIFO.
- $\overline{\text{FAULT}}$ goes active when a printer error condition exists.

Centronics Port Signal Timing

Table D.1 summarizes the changes in Centronics (parallel) port signal timing.

Table D.1 Signal timing, parallel port

Legend	Time Interval	Minimum[1]	Maximum
A	Data setup time	0.5	-
B	Strobe pulse width	0.5	500
C	Data hold time	0.5	-
D	ACK pulse width	1.0	-
E	Busy delay	0	0.1

1. All times are in μs.

Appendix E. FRU and Consumables Lists

Table E.1 lists all 5000 series printer FRU by part number. This appendix supplements the *Illustrated Parts List* (0113783). Following the FRU description are four columns that provide information about each FRU. An X indicates that FRU is in the following lists:

- 5122F
  FRU list 0188039
- 5240F
  FRU list 0175500-998
- 5122C
  Consumables list 0188040
- 5240C
  Consumables list 0175500-995.

Table E.1 5000 series FRUs and consumables

Part Number	Description	5122F	5240F	5122C	5240C
0101070-018	TUBING-FLEX .125/ .250 SILICONE 50A			X	X
0101070-026	TUBING-FLEX .375/ .625 SILICONE 50A			X	X
0101070-055	TUBING-FLEX .170/ .250 POLYETHYLENE VLD			X	X
0104004-030	MONITOR-14" COLOR 1,024x768 NI		X		
0104004-036	MONITOR-15" COLOR 1024X768 NI	X			
0110251	CONS-ADH 3M CA-8			X	X
0110261	CONS-HANDCLNR DYE			X	X
0118076	CABLE ASSY I/O-GPI EXT		X		
0118077	CABLE ASSY SORT CODE EXT		X		
0139687	DRAIN TUBE	X	X		
0173668	CONTAINER - SHIPPING PRINTHEAD				X
0174104	FIBER OPTIC ASSY - PACKAGED	X	X		
0175183	SCSI INTERFACE KIT		X		
0175780	CUE ASSY (6 FT) W/PKG	X	X		
0176040	ISA TO SCSI ADAPT BD PKGD		X		
0178499	VAC REGULATOR ASSEMBLY	X	X		
0178500	CABLE, FLUID SYSTEM AC	X	X		
0178526	CABLE, FLUID SYSTEM DC	X	X		

Table E.1 5000 series FRUs and consumables (Continued)

Part Number	Description	5122F	5240F	5122C	5240C
0178527	CABLE, DS MAIN TO IJC	X	X		
0178528	CABLE, DS OUTPUT TO IJC	X	X		
0178529	CABLE, BREAKER TO ACHV	X	X		
0178530	CABLE, ETHERNET TO DS MAIN	X	X		
0178531	CABLE, RELAY OUTPUT TO ACHV	X	X		
0178532	VALVE, FILL	X	X		
0178534	POSITIVE AIR SWITCH ASSEMBLY	X	X		
0178535	VAC TRANSDUCER ASSEMBLY	X	X		
0178536	VOLTAGE SELECTOR SWITCH ASSY	X	X		
0178537	FITTING, MIST FILTER	X	X		
0178538	FLOAT SWITCH ASSEMBLY	X	X		
0178540	AC LINE FILTER ASSEMBLY	X	X		
0178541	MIST HOUSING ASSEMBLY	X	X		
0178546	CABLE, 25DM/25DF 10 FT	X	X		
0178547	CABLE, 9DM/9DF 10 FT	X	X		
0178548	CABLE, ACHV TO IJC	X	X		
0178549	CABLE, OP PANEL TO IJC	X	X		
0178550	CABLE, PARALLEL 6 FOOT	X	X		
0178551	CABLE-SCSI TAPE DRIVE (OLD) 50P CENTRONICS	X	X		
0178552	CABLE, SERIAL	X	X		
0178553	CIRCUIT BREAKER	X	X		
0178555	COVER, PH FRONT HOUSING (240)		X		
0178556	COVER, PH REAR HOUSING (240)		X		
0178557	COVER, PH REAR HOUSING 120		X		
0178558	COVER, PH FRONT HOUSING 120		X		
0178559	TRANSCEIVER-ETHERNET	X	X		
0178560	EYELID ASSY 120		X		
0178561	EYELID ASSY 240		X		
0178562	EYELID, SEAL 120		X		
0178564	EYELID, SOLENOID ASSY 120/240		X		
0178566	FAN 115V (5120)		X		
0178570	NEST, PRINTHEAD (240)		X		
0178578	OPERATOR PANEL ASSY	X	X		
0178580	PCB, COM3/LPT2 OR COMP4/LPT3	X	X		
0178582	PH BOTTOM COVER ASSY 120				X
0178583	PH BOTTOM COVER ASSY 240				X
0178584	BYPASS PRINTHEAD ASSY (240)	X	X		
0178586	TRANSFORMER ASSY	X	X		
0178587	VALVE-XFLUSH/ANTISIPH/AIR INGEST	X	X		
0178588	SWITCH, SAFETY INTERLOCK ASSY	X	X		
0178589	CABLE, CHARGE DR TO PH (240)	X	X		

Table E.1 5000 series FRUs and consumables (Continued)

Part Number	Description	5122F	5240F	5122C	5240C
0178590	PCB, ADAPTER (240)		X		
0178591	PCB, TAB BUFFER (120)		X		
0178596	THERMISTOR INK/PH	X	X		
0178597	PCB, K4K MOTHERBOARD		X		
0178600	FILTERS KIT			X	X
0178602	CABLE ASSY-SIGS SORT CODE ADPT	X	X		
0178603	CABLE ASSY-SORT CODE	X	X		
0178605	FITTINGS KIT			X	X
0178606	FUSE 6.3 A IJC QTY 10			X	X
0178607	FUSE 10A SELECTOR SW QTY 10			X	X
0178609	FUSE 4 AMP ACHV QTY 10			X	X
0178610	FILTER ASSEMBLY VENT			X	X
0178611	FILTER ASSY, MAIN			X	X
0178612	FILTER, AIR			X	X
0178613	FILTER, FLUID INLINE			X	X
0178615	FILTER, POSITIVE AIR			X	X
0178617	FLUID BYPASS ASSEMBLY			X	X
0178633	CABLE, K4K TO K4K MOTHER BOARD		X		
0178634	CABLE, K4K TO IJC FRUN		X		
0178635	PCB, SEVEN SEGMENT	X	X		
0178644	RETURN ORIFICE ASSY-120 FRU	X	X		
0178645	JAR/FILTER ASSEMBLY	X	X		
0178650	CABLE, TRANSDUCER JUMPER	X	X		
0178714	FUSE 40MA ACHV QTY 10			X	X
0178740	CABLE-S100/S200:5120/5240 TACH/CUE, 10 FT.	X	X		
0178778	DISK-CD-ROM DRIVER	X	X		
0178833	CUE ASSY - PKGD	X	X		
0178938	CABLE ASSY -RELAY (FRU)	X	X		
0179331	KEYBOARD,PC/AT 104 WIN W/SKIN	X	X		
0179654	FLASH CARD B 32MB V2.30 STD US FONTS PKGD		X		
0179925	POWER STRIP	X	X		
0180087	POWER SUPPLY-LOW VOLTAGE (FRU)		X		
0180235	STEPPER MOTOR ASSY FRU	X	X		
0180237	SFTW V1.03 CD KANJI PC PKGD		X		
0180246	RETURN ORIFICE ASSY-240 FRU	X	X		
0180279	SOFTWARE-V1.05.11 FLASH W/ENET, PKGD		X		
0180555	FOAM SWAB (QTY 100) PKGD			X	X
0181011	CD-ADOBE TYPE FONTS - FRU		X		
0181018	VACUUM ELBOW FRU	X	X		
0181227	FILTER, VACUUM REGULATOR LARGE			X	X
0181327	FLASHCARD A-32MB, V2.30 ENET US FONTS, PKGD		X		

Table E.1 5000 series FRUs and consumables (Continued)

Part Number	Description	5122F	5240F	5122C	5240C
0181462	CABLE-OP PANEL TO IJC (240N)	X	X		
0181693	CABLE OYSTER TERMINAL		X		
0181772	EYELID, SOLENOID ASSY PACKAGED-120	X	X		
0181879	KNOB-KNRLD 5/16-18 PHEN BLK PKGD	X	X		
0181880	CUE MOUNT ASSEMBLY PKGD		X		
0181881	KNOB-KNRLD .375D SHFT PHEN BLK PKGD	X	X		
0182118	FLASH CARD A 2MB V1.05.09 STD PKGD		X		
0182119	FLASH CARD B VER1 20MB 5120 US FONTS PKGD		X		
0182120	FLASH CARD B VER1 20MB 5120 US FONTS PKGD		X		
0182121	FLASH CARD B VER1 20MB 524 KANJI FONTS PKGD		X		
0182122	FLASH CARD B VER1 20MB 5240EXT KANJI FONTS PKGD		X		
0182219	FLASH CARD B 32MB BLANK PKGD		X		
0182430	CABLE-RIBBON (IJ-INK HEATER) (240N)	X	X		
0182511	PCB INK HEATER (240N) W/VERSION 4.02 IJC FIRMWARE	X	X		
0182512	VALVE-CATCHER (240N)	X	X		
0182523	FILTER-AIR INGEST (5240N, 5122) FRU			X	X
0182525	HEATER-INK CONDENSATIN (240N)	X	X		
0182528	CLIP-FILTER PRINTHEAD				X
0182732	CABLE - T/C PKGD	X	X		
0183205	CABLE-5120/5240 TACH/CUE EXT. 20FT.-PKGD	X	X		
0183339	SENSOR-SPILL (FRU)	X	X		
0183433	WASHER-SOLENOID (QTY 10) (PKGD)			X	X
0183434	CABLE-SCSI TAPE DRIVE (NEW) HI DENSITY		X		
0184930	MOUSE-PS2/SERIAL COMBO	X	X		
0185429	PIVOT BRACKET ASSY (FRU)	X	X		
0185430	CAM FOLLOWER (FRU)	X	X		
0186001	CABLE-S220:5120/5240 TACH/CUE, 30 FT, PKGD	X	X		
0186760	INK TANK ASSY (5120/5240) FRU		X		
0186761	INK TANK ASSY (5240N) FRU	X	X		
0186765	CABLE ASSEMBLY-COAXIAL BNC M/BNC 6 FT (FRU)	X	X		
0186766	CABLE ASSEMBLY-COAXIAL BNC M/BNC 30 FT (FRU)	X	X		
0186767	CONNECTOR-COAXIAL BNC "T" ADAPTER (FRU)	X	X		
0186768	CONNECTOR-COAXIAL 60 OHM TERMINATOR (FRU)	X	X		
0187414	5120, 522, 5240 CUE MOUNTING KIT		X		
0187283	MIST FILTER (4 PACK)			X	
0187298	PRINTER FOOT FRU		X		
0187892	OPERATOR PANEL DARK ASSY DARK GRAY		X		
0188032	FRONT COVER (5122) PRINTHEAD (FRU)	X			
0188033	BOTTOM COVER (5122) PRINTHEAD (FRU)	X			
0188034	SOLENOID-EYELID (5122) (FRU)	X			
0188035	COVER-REAR P.H. (5122) (FRU)	X			

Table E.1 5000 series FRUs and consumables (Continued)

Part Number	Description	5122F	5240F	5122C	5240C
0188036	FLUID SUPPLY (FRU)	X			
0188037	AIR PUMP (FRU)	X			
0188043	FILTER-IN-LINE .125d TBG 25u BARB, 10 EACH (FRU)				X
0188200	PH-2"/120 DPI, PKD	X			
0188272	CABLE-VOLTAGE SWITCH JUMPER (FRU)	X	X		
0188301	CUE MOUNT ASSEMBLY PKGD	X			
0188364	ASSEMBLY-VACUUM PUMP	See Note [1]			
0188373	CABLE-ADAPTER				
0188382	5122 CHARGE DRIVER BOARD FRU	X			
0188464	BYPASS ASSEMBLY (5122) FRU			X	
0188575	2" EYELID ASSEMBLY	X			
0188766	CABLE, DS OUTPUT TO IJC (FRU)	X			
0188767	CABLE, DS MAIN TO IJC (FRU)	X			
P0177611	K4K BOARD ASSY		X		
P0178533	FLUID SUPPLY ASSY 5120/5240		X		
P0178569	MULTIPLE PRINTER INTERFACE	X	X		
P0178571	PCB- ACHV ASSY FRU	X	X		
P0178572	PCB, CHARGE DRIVER 120		X		
P0178573	PCB, CHARGE DVR INTRFACE (240)		X		
P0178576	PCB, IJC ASSY (120)		X		
P0178585	TAPE DRIVE, ODI 6250 SCSI		X		
P0178592	UMBILICAL/PH HOUSING 120-12 FT		X		
P0178593	UMBILICAL/PH HOUSING 120-24 FT		X		
P0178594	UMBILICAL/PH HOUSING 240-12 FT		X		
P0178595	UMBILICAL/PH HOUSING 240-24 FT		X		
P0178640	VACUUM PUMP FRU		X		
P0178643	AIR PUMP		X		
P0179505	PCB, DS MAIN/OUTPUT ASSY PKGD	X	X		
P0179506	PCB, DS OUTPUT ASSY PKGD	X	X		
P0179584	PCB, DS MAIN/OUTPUT HIMEM PKGD	X	X		
P0180553	PCB, IJC ASSY - 240 FRU		X		
P0180717	MANIFOLD ASSY-PRINTHEAD (120) PKGD		X		
P0180718	MANIFOLD ASSY-PRINTHEAD (240) PKGD		X		
P0182427	VACUUM PUMP (240N) FRU	X	X		
P0182428	UMBILICAL / PH HOUSING- (240N) 12’ FRU		X		
P0182429	UMBILICAL / PH HOUSING- (240N) 24’ FRU		X		
P0182524	MANIFOLD ASSY-PRINTHEAD (240N) PKGD	X	X		
P0182680	PCB, IJC ASSY - 240N FRU		X		
P0185071	MAILSCAPE COMPUTER (INTEL) FRU		X		
P0186889	PC-JETSCAPE		X		
P0188038	UMBILICAL-2", 120 DPI, 12 FT. ASSY (FRU)	X			

Table E.1 5000 series FRUs and consumables (Continued)

Part Number	Description	5122F	5240F	5122C	5240C
P0188041	UMBILICAL-2", 120DPI, 24 FT. ASSY (FRU)	X			
P0188153	PCB-IJC ASSY, 5122 (FRU)	X			
P0188157	POWER SUPPLY-LOW VOLTAGE (5240N 5122) (FRU)	X			
P0188979	PC (MAILSCAPE/ITOX) FRU	X	X		
P0188981	PC (DUAL CONTROLLER/ITOX) FRU		X		
PH0139750	PH - 1” / 120 DPI (REBUILT)		X		
PH0139750	PH - 1”/120 DPI (REBUILT)		X		
PH0181000	PH - 1”/240 DPI RGR		X		
SB75219	TAPE-REFLECTIVE			X	X
X0180032	CONTROLLER		X		
X0185071	COMPUTER-MAILSCAPE (INTEL) FRU	X			
X0188267	PC-DUAL CONTROLLER (FRU)	X	X		

1. Part of Field Modification 8 or 9 (angled startup fix); not yet released.

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